# FINANCIAL REPORTING WITH XBRL AND ITS IMPACT ON THE ACCOUNTING PROFESSION

## ZHENKUN WANG

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# Abstract

Since 2010, XBRL (eXtensible Business Reporting Language) has been widely adopted throughout the world. In 2013, both the HMRC (Inland Revenue) and Companies House in the UK accepted XBRL in the iXBRL (inline XBRL) format. Investors have had to face various issues related to XBRL-reported financial information, such as accuracy and interpretability, as well as potential risks with respect to this new format of financial reporting. The purpose of this study is to explore the impact of XBRL on the quality of financial reports and the accounting profession. For this study, a quality index evaluation model was built to examine the quality of financial reports. Over a thousand XBRL and non-XBRL formatted financial reports from three typical XBRL-adopting regions were then evaluated. This study finds that some of the contextual and accessibility qualities of financial reports have been greatly improved after using the XBRL format. However, the issue of accuracy has become more visible in current XBRL filings, due to the smaller and less comprehensive quantity of data stored in such filing systems. Using quality index scoring system, the trained professionals participating in this study confirm that XBRL-formatted financial reports demonstrate a greatly improved searching efficiency. Moreover, these reports generally display a quality superior to non-XBRL formatted financial reports under the designed quality index. More importantly, the quality of XBRL-formatted financial reports uploaded in the same database has been improving year by year. XBRL has not directly affected the accounting profession, being that most companies have outsourced the preparation of XBRL reports. However, it should additionally be noted that the questionnaires and interviews conducted with accountants in XBRL-adopting companies also reveal that these professionals feel increasing pressure both to prepare and to utilise XBRL-formatted financial information internally.

Keywords: XBRL, Financial Reporting, Accounting Profession

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Zhenkun Wang

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# LIST OF ACRONYM

| | |
|---|---|
| **AIS** | Accounting Information Systems |
| **ACCA** | Association of Chartered Certified Accountants |
| **AIS** | Accounting Information Systems |
| **ASB** | Accounting Information Board |
| **ASCII** | American Standard Code for Information Interchange |
| **BAA** | British Accounting Association |
| **BPEL4WS** | Business Process Execution Language for Web Services |
| **CAWS** | Continuous Auditing Web Services |
| **CEBS** | The Committee of European Banking Supervisors |
| **CORBA** | Common Object Request Broker Architecture |
| **COREP** | Common solvency ratio REPorting |
| **CPA** | Certified Public Accountant in the United States |
| **CPAS** | Continuous Process Auditing System |
| **CSRC** | China Securities Regulatory Commission |
| **DART** | Data Analysis, Retrieval and Transfer |
| **DEA** | Data Envelopment Analysis |
| **DEI** | Document Entity Information |
| **DTD** | Document Type Definition |
| **DTS** | Discoverable Taxonomy Set |
| **EAM** | Embedded Audit Modules |
| **ebXML** | Electronic Business eXtensible Markup Language |
| **EDGAR** | Electronic Data Gathering, Analysis and Retrieval |
| **EFM** | EDGAR Filer Manual |
| **EFRAG** | European Financial Reporting Advisory Group |
| **EML** | Environmental Markup Language |
| **EMS** | Environmental Management System |
| **ERS** | Exchange Reporting System |
| **EU** | European Union |
| **FASB** | Financial Accounting Standards Board |
| **FFIEC** | Federal Financial Institutions Examination Council |
| **FISC** | Financial Information Supply Chain |
| **FREP** | Financial Reporting Enforcement Panel |
| **FRIS** | Financial Reporting Instance Standards |
| **FRSC** | Financial Reporting Supply Chain |
| **FRTA** | Financial Reporting Taxonomy Architecture |
| **FTSE** | Financial Times Stock Exchange |
| **GAAP** | Generally Accepted Accounting Principles |
| **GAFIR** | Generally Accepted Framework for Integrated Reporting |
| **GBICC** | Global Business Intelligence Consulting Corporation |
| **GICS** | Global Industry Classification System |
| **GLFTA** | Global Ledger Taxonomy Framework Technical Architecture |
| **GLIS** | Global Ledger Instance Standards |
| **GRI** | Global Reporting Initiative |
| **HMRC** | HM Revenue & Customs, UK |

| | |
|---|---|
| **HTML** | Hypertext Markup Language |
| **IAS** | International Accounting Standards |
| **IASB** | International Accounting Standards Board |
| **IASCF** | International Accounting Standards Committee Foundation |
| **ICAEW** | Institute of Chartered Accountants in England and Wales |
| **ICB** | Industry Classification Benchmark |
| **ICT** | Information and Communication Technology |
| **IDEA** | Interactive Data Electronic Applications |
| **IFAC** | The International Federation of Accountants |
| **IFRS** | International Financial Reporting Standards |
| **IFRS-GP** | International Financial Reporting Standards for General Purpose |
| **IIRC** | International Integrated Reporting Committee |
| **IS** | Information System |
| **IT** | Information Technology |
| **IXML** | Information eXchange Markup Language |
| **KOSDAQ** | the Korean Stock Exchange |
| **KOSPI** | Korea Composite Stock Price Index |
| **KPIs** | Key performance indicators |
| **PCAOB** | Public Company Accounting Oversight Board |
| **PCC** | Pearson Correlation Coefficients |
| **PDF** | Portable Document Format |
| **REA** | Resource-event-agent |
| **RIXML** | Research Information eXchange Markup Language |
| **RTF** | Rich Text Format |
| **SEC** | Securities and Exchange Commission |
| **SMEs** | Small and Medium-sized Enterprises |
| **SOAP** | Simple Object Access Protocol |
| **TAM** | Technology Acceptance Model |
| **TRA** | The Theory of Reasoned Action |
| **TRP** | Taxonomy Recognition Process |
| **UK BAB** | United Kingdom Business Advisor Barometer |
| **VFP** | Voluntary Filing Program |
| **VIF** | Variance Inflation Factors |
| **VIS** | Vertical Information Standards |
| **W3C** | World Wide Web Consortium |
| **WWW** | World Wide Web |
| **XBRL** | eXtensible Business Reporting Language |
| **XBRL FR** | eXtensible Business Reporting Language for Financial Reporting |
| **XBRL GL** | eXtensible Business Reporting Language for General Ledger |
| **XDT** | eXtensible Business Reporting Language Dimensional Taxonomies |
| **XER** | eXtensible Business Reporting Language for External Reporting |
| **XFRML** | eXtensible Financial Reporting Markup Language |
| **XII** | eXtensible Business Reporting Language International |
| **XLink** | eXtensible Markup Language Linking Language |
| **XML** | eXtensible Markup Language |
| **XPointer** | eXtensible Markup Language Pointer Language |

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# CHAPTER 1

# INTRODUCTION

## 1.1 The background of this study

The Internet has significantly extended the amount of information available in a digital format, therefore making information more accessible and usable. Sharing and exchanging information via the Internet is changing the world in which people live. These changes have not only improved the global economy, but have also created new opportunities and new challenges for business (Tu, 2012; Rock, Hira and Loibl, 2010; Bonsóna, Cortijo and Escobara, 2009). Businesses use digital technology, both hardware and software, to improve the efficiency and effectiveness of their operating processes. The application of Hyper Text Mark-up Language (HTML) has made it very efficient for users to search for information on the web, and this has been a major impetus behind e-commerce. Similarly, eXtensible Mark-up Language (XML) has enabled possibilities for developing business applications that are user friendly and platform independent, and has also contributed to the increasing importance of e-commerce (Al-Htaybat, 2011; Debreceny, 2005).

Hill (2001) describes XML as, "enabling data on the Web or any large network to be readily swapped between any kind of device and any kind of application, regardless of what programming language the application was originally written in" (p.53). To accomplish this, XML tags enclose each fact or item of date 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 aggregate financial reporting data across its subunits, regardless of which types of hardware or software they are using, through the consistent use of metadata, such as tags.

In acknowledgement of the values of XML, the America Institute of Certified Public Accountants (AICPA), U.S. Securities and Exchange Commission (SEC), and major international firms are supporting the efforts of XBRL International, an international consortium of firms, to develop XBRL (eXtensible Business Reporting Language), an application of XML intended for use in business reporting. This action on the part of XBRL International includes the development of taxonomy for financial reporting under U.S. GAAP (Generally Accepted Accounting Principles). This 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 not only enable efficient and effective search and reporting of such information, but also facilitate the continuous monitoring and auditing of such information (Du & Roohani, 2007). More detailed information on the development of XBRL will be explained in the literature review chapter of this thesis.

The SEC issued the first rule of XBRL in February 2005. The motivation for this was to examine the feasibility and desirability of using XBRL-gagged data on a more widespread and even mandatory basis in the near future when the XBRL format becomes more widely used internationally. This was the first complete and usable version of an XBRL taxonomy (Peng and Janie Chang, 2010). It indicates that this digital financial reporting technology is growing from its infancy to its sophomore phase.

The second complete version of an XBRL framework was published in June 2008 and finalised in February 2009, which was another milestone in the XBRL revolution. Both of them indicate that financial reporting technology is leaving its tradition format (including paper, pdf, excel, etc.) and moving into actual applicable, digital and international comparable electronic forms. Debreceny (2005) critically examines the implications 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. The study finds very positive evidence of using XBRL reporting to support the SEC's initiative for the purposes of furthering greater transparency, stewardship and the smooth functioning of capital markets (Debreceny, 2005). The Committee takes XBRL to be vital for the democratisation of markets, making the recommendation that the SEC not only consider adopting XBRL for Form 8-K filings but, in July 2009, eventually mandating the XBRL format for all submissions made to the SEC (Aguilar, 2009).

Despite the fact that this technology is still very young, the adoption of XBRL has been remarkably fast globally. From the idea of an extended financial reporting specialised version of XML introduced by Charles Hoffman in April 1998, in just two years the first XBRL specification was born and XBRL International was formed as its international organiser/co-ordinator (Higgins and Harrell, 2003). Soon afterwards, accounting professional bodies and societies around the world rushed to join this organisation and development system. On one hand, this helped XBRL grow faster and become more powerful and more internationally compatible. On the other hand, this development enabled earlier members of XBRL to share the benefit of the latest computer applications in financial reporting.

By the end of 2007, there were 15 established XBRL Jurisdiction Representatives in Australia, the IASB, the Netherlands, Belgium, Ireland, Spain, Canada, Japan, the United Kingdom, Germany, Korea, the United States, France, Sweden and Denmark, and seven provisional jurisdictions in Poland, South Africa, Arab Emirates, Luxembourg, 'RIXML', Italy and China (Kelly, 2009). Many countries actively support this adoption of early versions of XBRL; for example, the Edgar Online system in the US, KOSDAQ system in Korean and the Shanghai Stock Exchange XBRL online report project in China. Many countries have already made XBRL mandatory for financial reporting or are planning to do so (Bonsón, Cortijo and Escobar, 2009b). For example, HMRC in the UK made XBRL mandatory for all tax filing from 31 March 2011.

It takes three steps to realise this process: step one, from March 2003, is to file accounts in XML based CT600 with computations and in a PDF format. Step two, from February 2006, is to allow computations to be submitted in a XBRL format and the final step was to make XBRL e-filing mandatory in 2010 (Abdullah, Khadaroo & Shaikh, 2009). Now 'iXBRL' has been created to bridge companies to submit financial reports in XBRL, by filing webpage based tables. These implications were not as successful as they were expected. As a result, the XBRL mandate date was extended to 2011.

However, most technology has unforeseen drawbacks which have a significant impact on society, both because of unpredicted technical problems and the adoption issues and resulting changes they bring to people's daily work place (Srinivasan, Adve, Bose & Rivers, 2004). For example, when personal computers were first introduced, the combination of the black and white coding interface (such as the Disk Operating System) and the high cost did not make them as useful and powerful as consumers

expected. However, as soon as personally computers entered consumers' daily life, the traditional typing machine and the typist profession disappeared. Later on, computers became very powerful and an important part of people's work and daily life, a fact which can no longer be overlooked.

Despite the high international pressure on information standardisation, there has been a lack of efficiency in the adoption process of XBRL in many countries (Troshani and Rao, 2007). Research related to XBRL financial reporting issues is needed to avoid unnecessary loss and damage to society, and to prepare for the digital transformation in the field of financial reporting. Currently, XBRL-related issues are one of the hottest spots in accounting and financial reporting in journals and magazines. Roohani et al. (2010) counted all the issues related to XBRL in the EBSCO, ProQuest and Lexis-Nexis databases between the years 2000 and 2005, finding 675 articles. However, when investigating its contents, only about 50 articles were longer than 5 pages, and very few of them had a good research value, indicating that the topic of XBRL has been under-explored. Contrary to the large number of people who have written about it, the number of researchers who have actually studied XBRL is very small. This situation has mainly been caused by the lack of educational resources, as XBRL research and adoption are still at a very early stage.

To update the current research situation as regards XBRL as well as studies that are related to financial reporting in XBRL and its impacts on the accounting profession, we conducted research into the literature using similar methods. After comparing the top five literature databases available in the UK (Science Direct, Emerald, ProQuest, Wiley and Gale), we found that there were 705 results from Science Direct, 6059 results from

Emerald and 22051 from Blackwell Synergy (Wiley) using the keyword "Financial Reporting" (date of search Nov. 2007). About 90% were filtered after refining them with the keyword of 'internet'. At the same time, literature related to technology innovation and society, especially in the financial reporting field, was harder to identify. Terms such as 'technology', 'innovation', 'society', 'internet', 'financial reporting' and their random combinations were used to find related literature. As an example, a search for the keywords 'technology', 'innovation' and 'society' returned 187 results from Science Direct, 5,347 results from Emerald and 12098 results from Blackwell Synergy. After scanning the abstract, we found that only about 2% of these results were actually related to this research topic. Over all, in advanced research, a very limited number of articles has XBRL in the key word and the abstract, and has accounting profession in their content.

For the purposes of this research, XBRL Financial Reporting was carefully examined, from the creation process of XBRL financial reports to their usability parallel to non-XBRL financial reports. More importantly, this study analyses the changes in the work efficiency of accountants who use a similar process to produce and complete financial reports in XBRL, comparing with a non-XBRL work process. In Chapter 4, a framework is developed to quantitatively assess the quality of XBRL financial reports comparing with previous non-XBRL formatted reports. In Chapter 5, we report on the short questionnaire and interviews conducted with professional accountants who will be using XBRL based accounting software applications or already have had XBRL work experiences, in order to find out the impact of XBRL on the accounting profession.

The official XBRL website, XBRL.org, has also published a good amount of information about basic XBRL information and its adoption status around the world. In addition, Bryant University has also published a website, XBRLEducation.Com, to contribute to its education and research. On the academic side, Debreceny and Gray (2001) have investigated the earliest subjects related to XBRL and financial statements. They suggest that the likeliness of a company publishing financial reports using website could be determined by size, foreign listing, non-local listing, level of technology, differences between market value and book value, firm-specific market risk and the debt-equity ratio, along with internet penetration level and national internet financial reporting environment as general influences (the general cross-listing is negatively related to internet financial reporting).

Later on, Weber (2003) investigated the cost efficiency issues when analysing financial information under an XBRL format. He concluded that XBRL would reduce the cost through obtaining and analysing information from business by addressing and eliminating incompatible reporting formats. Hodge et al. (2004) looked into the decision-making aspect of non-experts with XBRL financial reporting and concluded that using XBRL helps nonprofessional financial statements users acquire and integrate related financial statements and footnote information when making investment decisions. Duangploy and Gay (2005) have also argued that XBRL would make financial information analysis simpler and easier.

At the same time, the increasing trend of worldwide IFRS adoption compliments XBRL's usability. The trend of XBRL adoption is unprecedented (Pinsker, 2003) and there is nothing to stop it now, as even 'the credit crunch' proved (Tie, 2005). However, judging by the results of

searching popular literature databases (Gale, ProQuest, ScienceDirect, Wiley and Emerald, 2007), research assessing the impact of XBRL financial reporting on the accounting profession is still very limited. This research will focus on these two connected topics, as discussed in the next section.

## 1.2 The objectives of this study

There are many issues worth consideration when choosing research objectives related to XBRL, such as continuous (real-time) financial reporting and auditing, theories for XBRL structural development and adoption, XBRL financial reporting and economics. Yet a focus on the impact upon financial reporting by the adoption of XBRL on the part of the accounting profession is chosen for several reasons which will be explained below. The key question posed by this study is whether XBRL has improved the quality of financial reports, and how it may affect the accounting profession.

Starting from the point of view of technology, computer technology has been evolving since 1983 (Hinden and Deering, 1995) and Internet financial reporting has been explored by various researchers (Debreceny & Gray, 2001; Jones & Xiao, 2004; Xiao, Yang & Chow 2004; Williams, Scifleet & Hardy, 2006). Yet, the usage of a new computer application - XBRL for financial reporting - is still a fresh field (Hoffman, 2006). Despite the fast XBRL adoption trend (XBRL.ORG) and a wide discussion about XBRL technology and Internet Financial Reporting, there is a lack of current research on the implementation part of XBRL relating to the accounting profession itself (Khalifa, 2012).

Few studies have been conducted in this area. Therefore, this project aims to assess the efficiency of XBRL financial reporting; in particular, to evaluate the impact of XBRL on the efficiency and quality of financial reporting from the user's perspective. Efficiency is defined in this study as performing an accountant's work with the least possible expense of resources (Burlacu, 2009; Prendergast, 1912), while quality is assessed against the usage (e.g., convenience, timely) from the user's perspective. Based on the assumption that, with and without XBRL, all accountants will produce a similar amount of output - i.e. the quality and quantity of financial reports - the research question can then be divided into two related sub-questions:

**A. Do XBRL formatted financial reports provide a better quality than non-XBRL formatted reports?**

Redman (2001) has mentioned four criteria for deciding the quality of a good financial report: Current, Comprehensive, Easy-to-understand and Accurate. However, Benston (2003) argues that these criteria make more sense when Usefulness is added. The CFA Institute's XBRL Awareness Survey questionnaires asks for opinions about the importance of Reliability, Consistency, Timeliness, Comparability, and Granularity in a scale of 1 and 5. This study hence aims to explore whether financial reporting using XBRL will improve quality by examining the characteristics of information provided by XBRL formatted financial reports, compared with non-XBRL formatted reports. Typical aspects of financial reports produced by accountants from the information user prospective are examined, such as: whether it contains more useful information; whether it is more compatible with financial reports from different backgrounds; whether this new format of financial reports is more accessible; whether it

is more accurate than traditional hand prepared paper reports; and whether it is more comprehensive etc. Findings of the CFA Institute's surveys are listed in Chapter Four, in order to compare them with this research project's analysis of accountants' efficiency with XBRL.

For the purposes of this research project, Strong, Lee and Wang's (1997) data quality framework has been adopted and an index scoring model has also been constructed to assess the quality of financial reports. Strong (1997) suggests using intrinsic, accessibility, contextual, and representational features as the main indications of financial data. These five categories are then divided into different dimension. For example, intrinsic features include accuracy, objectivity, believability, and reputation. Strader (2007) also uses this framework to assess XBRL taxonomy components which confirm the usability of this framework in XBRL formatted financial data.

The index scoring model (ISM) will mark the selected financial reports according to each of the financial data quality dimensions with a score from 1 to 10, where 1 indicates extremely poor quality and 10 extremely good quality. Scores are then aggregated in categories and used for specific dimensional comparisons and analyses. Chapter Six presents the details.

The samples of financial reports were collected according to the availability of published XBRL formatted financial report data. The first set of XBRL digital reports were on the US EDGAR Online voluntary program (2004-2007), the first set of raw XBRL reports in the Shanghai Stock Exchange system (2005-2006), while the Southern Korean Stock Exchange web based XBRL reports (2007-2009) are the earliest publically accessible XBRL formatted financial reports in the world.

This study has collected up to 100 samples from each country as the first set of XBRL formatted financial reports. Later on, the US EDGAR Online updated its XBRL taxonomy and filing system (2008-2010) and the Shanghai Stock Exchange also upgraded its web based XBRL data presentation engine (2008-2010). Accordingly, an additional 100 samples have been collected from each new set. The non-XBRL formatted financial report samples have been collected in the same size with the same accounting period for the same country region, and for similar size and similar industries, to ensure the comparability of this data. In total, these 1000 financial reports are individually marked under ISM and compared according to region, time period, and data quality categories. We later considered three hundred XBRL and non-XBRL financial reports from the same three sources, whose results are identical to the previous index marking results.

## B. How would the adoption of XBRL affect the accounting profession?

The mandatory adoption of XBRL formatted financial reporting in many countries has certainly affected those who prepare of financial reports, especially the accountants, in different aspects. This study focuses on finding out the impacts of XBRL on the accounting profession; that is, if the definition, the work content, the position, the social needs and the employment of the accounting profession have been affected by the adoption of XBRL.

Questionnaires were distributed and interviews were conducted with professional accountants to find out how their profession has been affected. In addition, to enhance the analysis and confirm the findings in the part of this research concerned with the quality of financial reports, specific

questions about the quality of XBRL formatted financial reports have also been included in the survey. Professional accountants who have had experiences of creating financial reporting in XBRL and other financial related professions who had used XBRL formatted financial reports were asked about the quality of XBRL formatted financial reports. We then compared these views with their prior experience of non-XBRL formatted financial reports in each of the data quality dimensions.

The accountants were given a similar marking table for the quality of XBRL formatted financial reports, with score 1 being extremely inferior to non-XBRL formatted reports, and score 10 being considerably better than non-XBRL formatted reports. Finally, individual interviews have also been to gaining an in-depth view of the impact upon the practitioners. This study thus examines the accountant's efficiency a measurement that determines whether they need less time to do the same amount of work than previous non-XBRL procedures and whether the quality of work produced (here mainly financial reports) is superior to previous non-XBRL financial reports.

In accordance with the research questions design, we would note that Loertscher defines efficiency as doing more and better work in less time (Loertscher, 2007). This part of the research project hence focuses on the time aspect of the question in terms of whether the ease and simplicity of the work is improved from an accountant's prospective (i.e., the XBRL user). To assess whether non-XBRL or XBRL work procedures are faster than another, what an accountant needs to do is analyse both procedures on a daily basis. The number of steps involved in these two procedures and how much time it takes to complete them in total should also be looked at in details. In addition, non-XBRL and XBRL procedures are compared side

by side, in order to identify which steps are interchangeable, which steps are significantly improved, and which steps are added after the adoption of XBRL.

The process of creating an XBRL instance document (Janvrin and Mascha, 2010) and other daily accounting work associated with using XBRL applications to collect, sort, and analyse financial data, are listed and compared with non-XBRL procedures. Not only does how is the amount of time needed to complete these procedures evaluated, but the degree of ease and simplicity of the accountant's work has also been taken into account. Whether or not an accountant can do the same amount of work with less effort and less knowledge required when using XBRL is also measured to provide a viewpoint on the changes in the efficiency of the accountant compared to the non-XBRL work environment.

To confirm the procedure analysis results, previous questionnaire data has been abstracted and analysed to assist this research; namely, that which was specifically related to the work procedure and efficiency in general, taken from the UK Business Advisor Barometer (UKBAB, 2003) and the Institute of Chartered Financial Analysts (CFA Institute, 2007) -. The UKBAB's survey on "What accountants do and are having problems with" (2003) reveals that XBRL FR might enable computers to handle over one third of the accountant's daily job and solve about a quarter of the problems that they are facing today, under the condition that XBRL is successfully introduced and XBRL application software is well designed and used to handle the operation.

The CFA Institute also carried out an XBRL Awareness Survey in 2007. A few questions in these questionnaires have been proven to be useful

connected with how accounting related professions obtain and use financial data for their analysis and decision making. In addition to these findings, this existing study also identifies an issue; namely, that if XBRL could make accountants much more efficient than before, then what would be the consequences of such efficiency be for the accounting profession, particularly in terms of jobs and the nature of responsibilities? This question has brought forward two concerns: 1) the relationship between the size of the company and the career prospective of future accountants; and 2) the relationship between the adoption of XBRL and other IT technologies in an accountant's work and the nature of an accountant's specific responsibility.

In all, this study attempts to produce a tangible evaluation of the impact of using XBRL in financial reporting on the accounting profession. It is different from the XBRL marketing articles which are intended just to advertise the possibility of 'tremendous' changes (e.g., Cohen, Schiavina & Servais, 2005) that XBRL will bring to people's life and from the massive XBRL advocates' supportive discussions about how XBRL may benefit the financial information reporters and users. On the contrary, this study attempts to measure statistically and compare the quality of XBRL and non-XBRL formatted financial reports. These reports are produced by the professional accountant. Moreover, these new formatted financial reports would directly affect the collection and use of financial data of a wide range of users, including governments, investors, financial analysts, finance and accounting related academics, amongst others.

## 1.3 The significance of this study

This thesis contributes to the literature on the subject in several aspects. First of all, this is the first study of its kind to examine specifically the impact of XBRL on the accounting profession with a focus on the efficiency and quality of accountants' work. This thesis employs two analytical frameworks to analyse the efficiency and quality of accountants' work using a scoring index system. In the efficiency chapter, lists of accountants' works are collected and marked according to cost of time and level of complexity. This approach provides a clearer method of assessment for technological impacts on accounting practice. Similarly, the data quality chapter also proposes a new theoretical framework to measure and compare the quality of financial reports in an XBRL and non-XBRL format. It extends Strong's (1997) financial data quality concepts and applied Strong's (1997) categories of qualitative measures in designing a measurable quantitative index marking system.

Secondly, this research adopts a combination of research methodologies and an interdisciplinary approaches. Questionnaires and interviews are followed by a theoretical analysis in order to enhance understanding of the topic, while ensuring the accuracy of the findings and expanding the scope of the research. Contributions from other literature have been broadly collected from the accounting, finance, and computer science disciplines. Not only are financial reporting related papers, but also technical XBRL notes and technology adoption timeline studies are considered to assess the impact of XBRL on different aspects of the accountant's work at different time periods of XBRL adoption.

Overall, a significant amount of new knowledge across accounting, finance and computer science has been exploited through this study. The method of accessing an accountant's work to compare XBRL with non-XBRL

working environment has, until now, never been introduced in the literature on the subject. This project also constitutes the first application of Strong's (1997) financial data quality criteria with a scoring index system in order to compare the quality of XBRL financial reports with non-XBRL formatted report.

In practice, this study has introduced two sets of statistical method to analyse the impact of technology on an accountant's work. The findings can provide accountants and finance related professions with a much better guide for how to learn XBRL and use XBRL base software and databases. In turn, it will give companies and government (XBRL adopters) a clearer view of how to take best advantage of XBRL and related information technologies with the least cost, or be of similar use to anyone who needs to use financial data a clue of what changes XBRL might bring to their work and how to make good use of this new technology. Finally, it fulfills the urgent need of knowledge for the vast numbers of accountants and financial information users who are going to use XBRL (Baldwin, Brown and Trinkle, 2006).

## 1.4 Research methodology

In order to achieve the stated research objectives, this study adopts distinctive approaches: comparing working processes to evaluate the efficiency of accountants' work with and without XBRL; using an index marking system model to evaluate the quality of financial reports that accountants produced with and without XBRL; and conducting questionnaires and interviews to gain the opinions of accountants who have

used XBRL on its efficiency in comparison with the purely theoretical findings.

Firstly, the working procedure of traditional ways of preparing and using a financial report is discussed and compared with the current XBRL financial reporting process in order to gauge the efficiency of accountants' work before and after adopting XBRL. The workflow of a standard XBRL process (Janvrin & Mascha, 2010) was listed and compared with an accountant's workflow without XBRL. Related questionnaire data from previous research projects conducted by the UK Business Adviser Barometer (UKBAB, 2009) and the CFA Institute (XBRL awareness survey 2007 and 2010) have been abstracted to support the analysis. The major questions abstracted are, firstly, topics related to the content of an accountant's work with (CFA Institute) and without XBRL (UKBAB). Secondly the amount of time and resources needed to complete the accountancy tasks; notably, how much time an accountant needs to produce a regular financial report and the length of time it takes to reach the information user. Contents of the accountant's work in UKBAB questionnaires are then used to analyse the quality of time requirement and complexity in a comparison between XBRL and non-XBRL working environments.

Secondly, a Numerical Index System has been introduced to mark a number of XBRL and Non-XBRL financial reports and compare values regarding key aspects of the quality of financial reports. Strong's (1997) and Lee and Strong et al.'s (2002) financial data quality models have also been used and extended to construct the index system. The ideal and practical conditions of conducting this index system analysis are then explained. This objective involves creating a good financial report criteria

index system, collecting sample traditional and XBRL formatted financial reports, marking them with scores according to the criteria, and finally statistically comparing all those scores with means and standard deviations. Other quality models developed in previous research, such as Petravick and Gillet (1996), Louwers (1998), Debreceny and Gray (2001) have also been referenced and compared.

Finally, this research has sought out opinions from practicing accountants and related professionals who have already used XBRL on the efficiency of XBRL and related issues in XBRL applications. The earliest XBRL experienced accountants are these who participated in filing the EDGAR Online volunteer programme (2005) in the US. Their contacts are available in their XBRL formatted financial reports. China also introduced XBRL in 2005 requiring the publication of XBRL formatted financial reports of public listed companies in the Shanghai Stock Exchange website. Therefore, the interviews are conducted with Chinese XBRL organisers instead of questionnaires being sent to individual accountants as in the US. The UK's HMRC also mandated XBRL filing of tax returns in March 2011. The questionnaires and interview research conducted are targeted at accountants who have had XBRL experience. Professional accountants were asked about the effects of XBRL in regard to their work efficiency and requested to consider the quality of the financial reports that they had produced in XBRL, with a score system similar to the index marking system. Their personal experience and suggestions regarding the XBRL adoption are additionally included. These questionnaires and interviews provide empirical evidence to confirm the findings analysed in previous chapters.

## 1.5 Thesis outline

This thesis can be divided into three major sections: preparation, research, and discussion. In the first two chapters, a detailed literature review chapter covers the development of XBRL, how previous research is related to the quality of formatted financial reports after using XBRL, and how XBRL has affected different financial information users. The research methodology chapter then explains how the quality index system was built, and how it is to be used to mark different types of financial reports. Related issues concerning marking participants, as well as later questionnaire and interview sections have also been discussed.

The second section explains the results of each part of the research in pilot and field stages. The pilot research evaluated another group of XBRL and non-XBRL formatted financial reports from three typical XBRL adopted regions. During the field research stage, opinions about XBRL from professional accountants were collected by questionnaires, with additional interviews conducted to confirm the findings. Finally, all results have been compared with previous assumptions, limitations of contributions of this thesis have been outlined, and the project concludes with a discussion of future possibilities for research. Figure 1 below demonstrates the structure of this thesis.

Research results are given in Chapter Four and Chapter Five. The research methodology chapter introduces a new marking framework to analyse different aspects of the accountant's work as influenced by XBRL. Due to the nature of the question (efficiency is debatable), Chapter Four collects and compares a number of previous questionnaire research data regarding

the work content of professional accountant and XBRL awareness in the profession. Finally, a framework of analysis is built based upon the confirmed typical work content of the accountant derived from these questionnaires, with two major scoring criteria: Time and Complexity. A side0to-side comparison reveals that by introducing data, the efficiency of the accountant's total work will be increased at least twice without added general complexity.

**Figure 1  Structure of this dissertation**
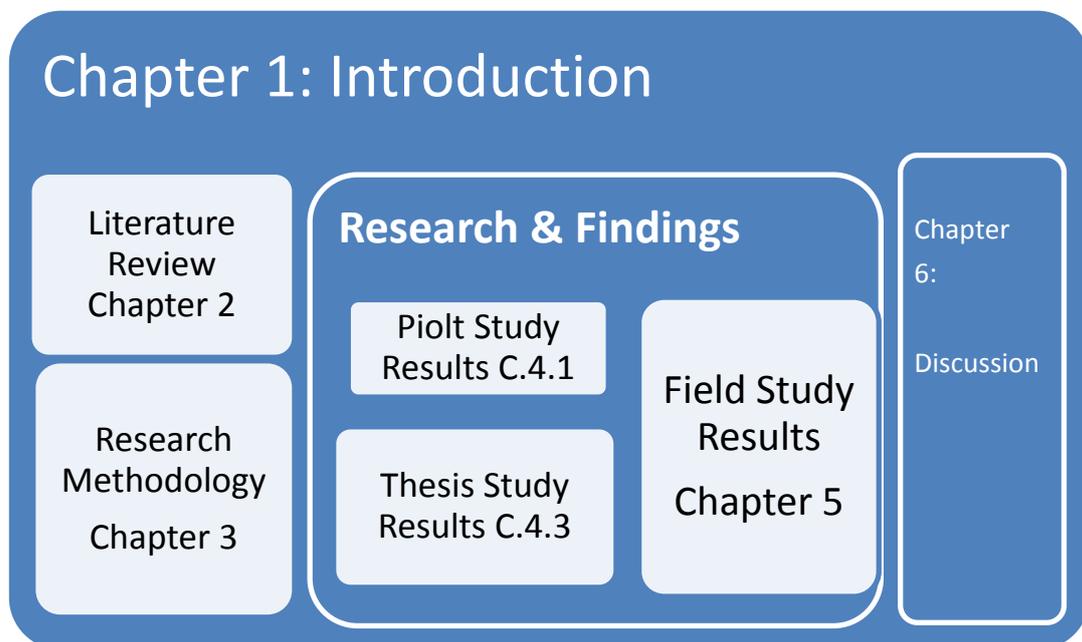


Chapter Four presents an assessment of the application of the scoring system to the quality of financial reports in both XBRL and non-XBRL format. The criteria of the second analysis framework for financial reports is based on Strong's criteria for the quality of financial information (1997), which include intrinsic, accessibility, contextual and representation. A thousand XBRL samples and non-XBRL samples were collected from the US, China and Korean, then marked manually on each detailed criteria with a score of 0 to 10. The results of these markings show a much higher intrinsic quality in the US series 2 Edgar Online XBRL formatted financial

reports, and a much higher representational quality in Korean XBRL formatted financial reports, than non-XBRL financial reports of the same region and year.

To enhance the findings, a set of questionnaire and interviews have been conducted. The content of these questionnaires and interviews are designed with similar questions in Chapter Five regarding the impact of XBRL on the efficiency of accountants and the quality of financial reports. The participants in these questionnaires and interviews are accountancy related professional who have used XBRL before.

Finally, Chapter Six concludes this study with an examination of all the findings. It also discusses limitations and highlights the contributions made. Areas for future research are also highlighted in this final chapter.

# CHAPTER 2

# LITERATURE REVIEW

## 2.1 The Development of XBRL

The literature review specific to XBRL and the technologies influencing financial reporting is based on a limited number of publications from digital labs and general web search engines. This is because XBRL has only officially existed for less than ten years and publications regarding the impacts of XBRL are limited. On the contrary, financial reporting has a long history with a well-established body of literature. Therefore, for this thesis, the research of the relevant literature will start with exploring the history of financial reporting and its evolution. The literature review will then be narrowed down to investigating the characteristics of financial reporting in the digital era and specifically the emergence of XBRL and its current technology structure. Finally, we sought out the latest XBRL related studies and articles e.g. XBRL's influences on the financial reporting theory framework and practices, and the possible results of change in the working process, efficiency and social positions of related professions.

The first part of this chapter is hence concerned with financial reporting and its evolution, while the second part of this literature review is about XBRL. This part will discuss the XBRL concept, practice, development, international debates and other related issues. The third part will identify the need for this research by reviewing previous research related to the efficiency of an accountant's work, and the quality characteristics of financial reports. These criteria are the key items in the models to assess

the impacts of XBRL on financial reporting and the accounting profession. The following definitions will be used to guide this study.

Accountant: One that keeps, audits, and inspects the financial records of individuals or business concerns and prepares financial and tax reports. The primary role of accountants is to collect, organise, analyse, and present information to internal and external parties (Miley and Read, 2012).

Accounting information system (AIS): A specialized subsystem of the MIS. Its purpose is to collect, process, and report information related to the financial aspects of business events (Miley and Read, 2012).

Legacy systems: A computer system or application program which continues to be used because of the prohibitive cost of replacing or redesigning it and despite its poor competitiveness and compatibility with modern equivalents. The implication is that the system is large, monolithic and difficult to modify. (Arnold, 2006)

XBRL (eXtensible Business Reporting Language): An application of XML technology to embody metadata on data sheet, so that computers can read the content of financial reports to provide faster search and even financial analysis. However it is now generally understood as a standard format for reporting financial data. XBRL is an internationally agreed, open specification that uses XML to structure financial information for automated electronic processing. It is being adopted by major accounting standards bodies, regulators, tax authorities, banks and credit organisations around the world to streamline the reporting and analysis of statutory financial statements and other business financial information (Gray & Miller, 2009).

### 2.1.1 The emergence of extensible business reporting language

Internet Financial Reporting emerged as soon as computers and the internet became one of the vital machines in today's office. Debreceny (2002) points out that cooperates use different channels to publish financial information to different stakeholders; for example, printed annual reports, press releases, analyst briefings, conferences and Internet financial reporting. The financial reports published are either traditional or digital. Printed annual reports, press releases, phone calls and on-site visiting constitute more traditional methods. In contrast, current digital methods are more variable and less costly, such as filings published in stock exchange database and the regulator's website, official corporate disclosure websites, emails (normally an address book of related contacts are created when they fill in a volunteer form suggesting they agree to receive them), and other methods using a computer with or without the internet. Paper reporting usually provides materials from some specific time periods or economic events, such as an annual report that reports fiscal financial report. Press releases could be used to discuss the possible cause of gain or loss for a company. Therefore, paper disclosure covers a smaller amount of information with less data complexity. This research attempts to use information technology to mitigate problems caused by information overload.

Electronic disclosure can be disseminated through various channels, including email, website disclosure and conference call. The basic criteria for using email for data dissemination would be the possession and availability of email addresses. However, due to limited email usage, information cannot be fully distributed to the public by email alone.

Regarding the presentation format, web pages can be divided into HTML, ASP or PHP with Excel, Word, PDF and XBRL download. PDF is a special file format developed by the Adobe Corporation. Financial information presented in PDF format usually does not change in the design of paper versions of the data. Therefore, PDF documents can look and print exactly like the original paper documents and are therefore suitable for human reading. Compared to paper disclosure, has PDF format provides some improvements since this technology allows electronic dissemination of financial information and can improve information accessibility. This means that investors can download PDF files through the Internet. However, information specified in PDF format is not indexed by search engines (Janvrin, Pinsker & Mascha, 2011). Human intervention is still required for processing PDF documents, such as filtering, calculation or re-entering of specific information for further analysis and decision-making.

By the end of the 20th Century, the HTML format emerged to be the mainstream choice for web development and 58% of companies provided full financial reporting in HTML format (FASB, 2000). Information in HTML documents can be indexed by search engineers and can be viewed directly in the browser. This can save some time for investors to collect information from the WWW. Therefore, HTML technology adds more value to the information user than Adobe Acrobat technology. However, there are some limitations for HTML as an information dissemination medium. Search engines cannot uniquely identify reporting data elements and effectively translate data (Janvrin, Pinsker & Mascha, 2011). These will reduce the efficiency of investors in importing and reusing data direct from web source. The problems of searching information on HTML Web can be identified as "resource discovery" (Bowman et al., 1995) and

"attribute identification" (Salton et al., 1996). Instead of identifying unique data elements from HTML pages, the search engines will return thousands of potential web sites from which the investor will have to filter out the desired information. Bosak (1998) indicates that HTML pages have only limited semantic structure and are essentially formatting tags that provide layout information to the browser, thus limiting the usefulness of information retrieval (Tenenbaum, 1998).

XBRL (eXtensible Business Reporting Language) is an application of XML intended for use in digital files, also permitting data swapped between heterogeneous systems (Hill, 2001). XBRL allows the corporate employee to tag every piece of information relevant to business reporting and decision making (Bovee et al., 2001). Such taxonomy of tags would provide a stable and semantically consistent system that makes an effective search possible. Under these circumstances, the software agent acts on behalf of human and overcomes the machine unreadable problem of HTML tagged documents, so providing timely and sufficient information to improve the efficiency of an investor's decision. Holmes et al. (2002) indicate that investors will increase their demands for fast access to accurate financial information. XBRL is hence the technology that provides the financial community with a standards-based method to prepare, publish, reliably extract and automatically exchange financial statements.

In order to prove that XBRL technology has more value and has a bigger impact on an accountant's work than current HTML technology, this study will compare and analyse these two formats. The presentation of HTML format is easier for human reading and understanding because HTML describes what font, font size and colour the text of document should adopt

when viewed by an information user. However, there are some difficulties for users in searching or retrieving specific company information from HTML-formatted pages. Under most circumstances, information obtained from a HTML page search needs to be manually processed prior to becoming useful decision-making knowledge. While human beings are limited by their ability to acquire visual information and process data, a report format can significantly affect information usage and decision-making efficiency (Davis, 1989; Hirst & Hopkins, 1998; Maines & McDaniel, 2000). However, when the amount of information overwhelms the decision maker, the time pressure will increase and the efficiency for humans to manually process information will decrease (Hwang, 1994). Under such a situation, the probability of delay and human error, such as overlooking some critical data and making typos, will increase. Whenever the received information keeps growing, the decision-making quality deteriorates.

Therefore, HTML technology cannot efficiently solve information overload problems. In contrast, the XBRL format was not initially designed for human reading. However, the semantic structure of XBRL tags increases the efficiency of information accessibility and allows software agents to automatically process information. Under the electronic reporting channel, XBRL technology extends information dissemination power from an information supplier to an information consumer (Tan and Shon, 2009). A message retrieved by search engine can be automatically calculated and converted into individual analysis tools. Manual data conversion process can be greatly eliminated. Long-existing information overload problems among corporate websites can be better handled through XBRL technology. Information dissemination media using XBRL technology can obtain a significant higher volume of specific information in a shorter time period

and so avoid human errors (Matherne & Coffin, 2001). Such improvements in terms of high data quality can also raise the efficiency of decision-making. Any drawbacks with the visual presentation for the XBRL format can be resolved with the application of XSL tool (Debreceny & Gray, 2001).

According to the above discussion, XBRL technology has more advantages than HTML technology in dealing with large amount electronic reporting information and can therefore add value to the investment decision process. Debreceny and Gray (2001) specifically examine the attributes and merits for XML and XBRL. Bovee et al. (2001) have also investigated the reconciliation between the proposed XBRL taxonomy of financial statements and firms' reporting practices. They point out that a poor fit may lead to information loss and to subsequent resistance to the use of XBRL technology. Besides, the International Accounting Standards Committee (Janvrin, Pinsker & Mascha, 2011) once published a report on business reporting on the internet, which suggested a considerable variation in the extent and nature of internet financial reporting. The Financial Accounting Standards Board (FASB, 2000) investigated a study on the electronic distribution of business reporting information, which found that 99% of the top 100 Fortune 500 companies have websites, and 94% include financial information. These studies have discussed related issues on developing XBRL technology. Taking the search results of top five literature databases (Wiley & Gale, 2007), we see that there is an absence of any academic research to investigate the value of XBRL technology and its influences to the accounting profession up until today (Janvrin, Pinsker & Mascha, 2011).

### 2.1.2 The application XBRL in different areas

The surge in need for internet-based financial reporting technology was already brought to people's attention at the end of 1990s. Debreceny and Gray (2001) were two of the first researchers to give good reasons in their research papers for having international standardised rules for online business and financial reporting. Later on, AICPA (American Institute of Certified Public Accountants) offered seed money for the development of this XML related technology (Pinsker, 2003). The first prototype was completed in December 1998 (Shaikh, 2005). It was first called eXtensible Financial Reporting Markup Language with a committee formed in August 1999 (Mayne, 2002). In April 2000, this technology was finally called XBRL and the committee was named as XBRL steering committee (Jones & Willis, 2003). This committee has continued to grow with members across the world, including 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. The job of domain work is to define a standard set of terms for each element of financial reporting. This unifies the format of financial information, hence providing a strong basis for online financial information exchanging. In the future, XBRL will also define more sets of standards in wider areas of business reporting (Garthwaite, 2000; then proven by Troshani & Lymer, 2010). Grounded on the first part of the committee's work, the specification work then develops the technical sets of xml tags. This work is well-structured with every small set of xml tags developed fitting into the whole structure of information data system which is also increasing in size by time.

Principally, the tags system is shaped like a hierarchical database. More specific tag terms are then unfolded in more general terms. The XBRL development committee in the US is currently focusing on external financial reporting (Debreceny & Gray, 2010).

The adoption record of XBRL is very promising. Evidence is provided both in terms of the size of the XBRL Organisation and fast spreading XBRL activities and research projects. The number of members of the XBRL International group has increased to over three times to over 450 companies and agencies worldwide in the last five years (Premuroso & Bhattacharya, 2008). XBRL implication practice and research has become popular in the US, European to Asian countries. For example, in the US more than 8,000 banks have been filing quarterly call reports in XBRL since October 2005 (Bonsón, Cortijo & Escobar, 2009a). In the UK, Her Majesty's Revenue and Customs has been developing XBRL taxonomies to work in conjunction with the UK Financial Reporting taxonomy. HMRC has stated that, "All companies should be required to file their company tax returns online using XBRL, and make payments electronically for returns due after 31 March 2010" (Boritz & No, 2009). In Spain, over 400 banks are filing monthly financial statements in XBRL to the Bank of Spain (Bonsón, Cortijo & Escobar, 2009a). In Belgium, filing of accounts by companies to National Bank of Belgium has switched to XBRL since April 2007 (Bonsón, Cortijo & Escobar, 2008). In Japan, the Tokyo Stock Exchange launched a pilot system in 2006 to demonstrate the usage of XBRL in financial statements which introduced this new technology to all financial bodies in 2008 (Plumlee & Plumlee, 2008).

Moreover, when searching for the key word XBRL in major digital libraries (AAA Digital Library, ProQuest, Science Direct and Emerald etc.),

the number of research and articles connected to XBRL has also increased in parallel year upon year. More and more companies and financial institutes are aware of XBRL now. In all, as Jon Udell (2006) states: "Slowly but surely, XBRL is winning converts among accountants and governments".

Although XBRL usage is still in its early stages, there are already a good number of business software programs available to apply the XBRL format. Most of them have proved or are proving the advantages of XBRL. The first software that was launched by SEC is the Interactive Financial Report Viewer. It is applied significantly in the banking industry, where the FDIC mandates its use for over 7,000 banks. However, the number of companies that enrolled in the voluntary program, which will have their data represented in the Interactive Financial Report View, is very limited. Only the data of 32 companies was found on the system surface (Garbellotto, 2008a), although the actual number could be much bigger inside the database.

Compared with other early XBRL application attempts, Hitachi America has successfully introduced Xinba 2.0 Reader and Analyser 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 internet (Weverka & So, 2008). Xinba 2.0 Reader and Analyser also support Simple Object Access Protocol and Web Service Description Language to enable end users to send requests and receive instance data from third party data vendors. Many more features of this software reveal the potentially effective application of XBRL in financial practice (Clements, Schwieger & Surendran, 2011).

Edgar Online currently subscribes 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 enables the EDGAR system to accept XBRL documents from companies and lets the public view a XBRL document when they wish a more accurate description information of that company. One active participate is the Shanghai Stock Exchange in China, who made XBRL mandatory for all listed companies in 2005. They made over 9,000 filings for the SEC's current text-based EDGAR system every year, while the public used it for 375 million searches (Yan et al., 2010). EDGAR Online now delivers the fundamental data of Chinese companies from both the Shanghai Stock Exchange and Shenzhen Stock Exchange in XBRL format, which includes the current financial filings of all Chinese companies that trade on Shanghai Stock Exchange and the Shenzhen Stock Exchange over the past five years in data terms. This usage has certainly strengthened the influence of the XBRL organisation and improved greatly the applicability and usability of XBRL applications with practical data.

Technically, XBRL is a standard to manipulate financial information (i.e. line items in financial report) on a computer. The differences between normal computer information exchange technology (such as Microsoft Word, Adobe PDF and Microsoft Excel) and XBRL are significant. First of all, it gives or attaches a code to each line item you report. Secondly, the code is unique to a specific financial region or worldwide. Third, relationships are established between each code depending on the financial line item they present. Finally, and most important of all, both the definition of the code and its relationship are very carefully designed by finance and computer experts, agreed by financial authorities and are required to be followed by financial information reporters. The standard of

the code is called 'Taxonomy'. The relationship between codes is called 'Business Rules'. The actual data financial information reporters (i.e. accountants) following these technique are called 'instance documents'.

An accountant may paste this type of information directly into a Word document or Excel file and send it to financial report end users. However, in a XBRL financial reporting, an accountant needs to do more work.

For example, in a typical financial statement such as shown in Table 1.

**Table 1 Financial spread sheet data sample**

|                        | 2010 £'000 | 2009 £'000 |
|------------------------|-----------:|-----------:|
| Land                   |      3,235 |      2,654 |
| Buildings              |    185,654 |    163,357 |
| Furniture and Fixtures |     28,568 |     31,986 |
| Computer Equipment     |      6,231 |      4,344 |
| Others                 |      4,564 |      7,568 |
| Total                  |    228,252 |    209,909 |

First, the code is required to be found for each of the financial data terms from the taxonomy. Here, normally, the code found for 'Land' is 'ci_Land'. Then, the numerical data under these codes needs to be inputted in a logical way. Afterwards, the code has to be re-arranged with data in a XBRL defined form in an instance document. Finally, before sending it out, the data has to be double checked to make sure the input data is correct by verifying the results from various calculations amongst the financial data. For instance, the values of Land, Building, Furniture and Fixtures, Computer Equipment and Others added up together should be equal to the value of Total. Actually, this kind of calculation relationship may already be defined in the Taxonomy between codes, which is called 'business rules'. The name of this procedure is called 'instance documents validation'.

There are various benefits to using XBRL for financial data users. The key advantage is validation. The validation tool software can tell almost exactly which data may be wrong, instead of enduring the previously time costly process of finding out where one has gone wrong in a long spread sheet report. Furthermore, after mistakes are identified, users can easily correct the data and all other related calculation by one click in a XBRL intelligent software, instead of check the data manually entry by entry which was not only more complicated but difficult to correct all the data.

**Figure 2  XBRL technical design map**
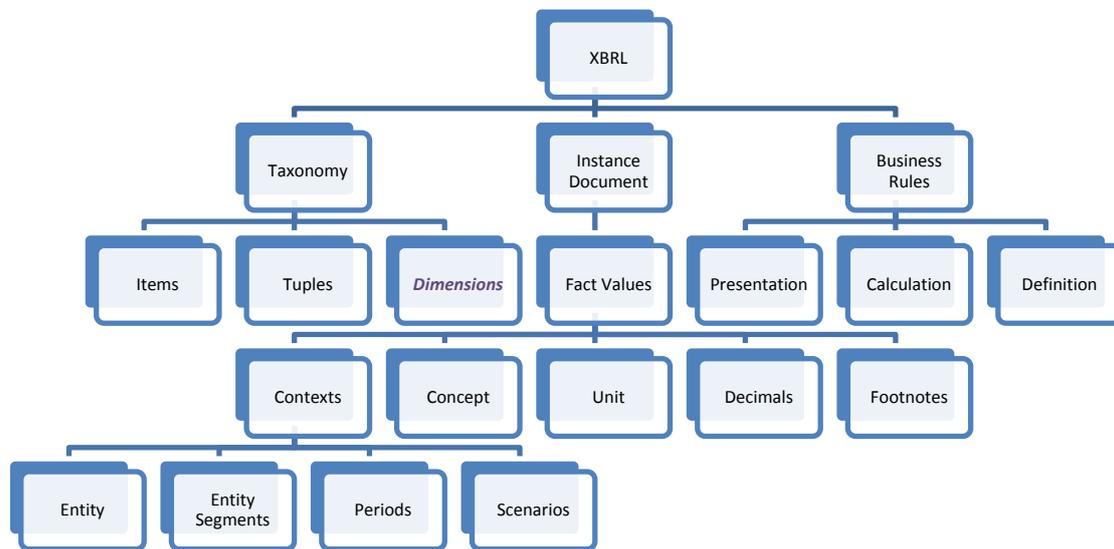


Note: Here presentation and definition come under the concept of Business Rules in consideration that they are all concerned with the relation between taxonomy line items.

In consideration of XBRL from a technical point of view, the following section explains it by breaking the block into three pieces: Taxonomy, Instance Document and Business Rules. Figure 2 above demonstrates the technical design and relationship between Taxonomy, Instance Document and Business Rules.

**Taxonomy**

An XBRL taxonomy defines the most regular financial reporting terms into a standard set of XML item. Financial data preparers can use it as a dictionary that they have to refer to each time they input a financial data. The taxonomy is the key element of XBRL.

Taxonomy here consists of Item, Tuple and Dimension depending on the individual characteristics of the financial data line item. Amongst which, the dimension is still in the infant stage of the developing process. Some of the features of this dimension conflicts with Tuple.

**Table 2  XBRL structure and explanation**

| name | A required attribute. Unique for every XBRL concept. E.g. "PropertyPlantAndEquipment" |
|---|---|
| id | Another required attribute. Unique for every XBRL concept. This is used to further differentiate items. E.g. "ifrs-gp_PropertyPlantAndEquipment |
| type | The data type of an item or concept. Available types in XBRL are: decimalItemType, floatItemType, doubleItemType, integerItemType, byteItemType, nonPositiveIntegerItemType, negativeIntegerItemType, intItemType, shortItemType, nonNegativeIntegerItemType, unsignedLongItemType, unsignedShortItemType, shareItemType, pureItemType, unsignedByteItemType, tokenItemType, languageItemType, positiveIntegerItemType, monetaryItemType, fractionItemType, stringItemType, booleanItemType, hexBinaryItemType, base64BinaryItemType, anyURIItemType, QNameItemType, durationItemType, dataTimeItemType, NOTATIONItemType, timeItemType, dateItemType, gYearMonthItemType, gMonthDayItemType, gDayItemType, gMonthItemType, normalizedStringItemType, NameItemType, NCNameItemType. This is also required. |
| substitutionGroup | Whether it's an xbrli:item or xbrli:tuple.  Required. xbrli: dimension is still an critical term. |
| nillable | Nil feature of XML Schema. Normally it has a "true" value. |
| xbrli:periodType | Used on each taxonomy to identify whether the concept is "instant" (as at/as of) or "duration" (for the period ended/ending). Required. |
| xbrli:balance | Optional. Only used on monetary type concepts. Could assign value as "debit" or "credit". |

XBRL uses the XML Schema with added features to define these three concepts. The features from the original XML Schema are 'element name', 'id', 'type', 'substitutionGroup' and 'nillable'. Table 2 lists their descriptions. Item, Tuple and Dimension in XBRL taxonomy are explained below. Each concept is described with an UBmatrix screenshot of UK GAAP Taxonomy, followed with a script of readable code.

An **item** is the most basic XBRL taxonomy element. It contains the actual data. Table 3 shows the screen view of an item.

**Table 3  XBRL programme view one**

| Prefix | Label | Name | Data Type | Abstr... | Substitutio... | Balance | Period Type | Nillable | Flag | Date Last Changed |
|--------|-------|------|-----------|----------|----------------|---------|-------------|----------|------|-------------------|
| uk-gaap-pt | Land and buildings operating leases expirin... | LandBuildingsOperatingLea... | Monetary | False | xbrli:item | Credit | Instant | True | False | 2007-05-31T09:24:48 |
| uk-gaap-pt | Land and buildings operating leases expirin... | LandBuildingsOperatingLea... | Monetary | False | xbrli:item | Credit | Instant | True | False | 2007-05-31T09:24:48 |
| uk-gaap-pt | Land and buildings operating leases expirin... | LandBuildingsOperatingLea... | Monetary | False | xbrli:item | Credit | Instant | True | False | 2007-05-31T09:24:48 |
| uk-gaap-pt | Land and buildings, freehold | LandBuildingsFreehold | Monetary | False | xbrli:item | Debit | Instant | True | False | 2007-05-31T09:24:48 |

The code for the first item highlighted in green is shown in Table 4.

**Table 4  XBRL coding sample one**

```
<element    name=    "LandBuildingsOperatingLeaseExpiringAfterFiveYears"    id=    "uk-gaap-
pt_PropertyPlantandEquipment"  type=  "xbrli:monetaryItemType"  substitutionGroup="xbrli:item"
nillable= "true" xbrli:balance= "credit" xbrli:periodType= "instant">
```

The codes just list information about that item in a formal way, enclosed within triangle brackets. In this way, they are understandable to computer systems.

**Tuple** contains combinations of items and sub tuples. If an item is like a file in a computer, then Tuple is like folders in a computer. They do not contain actually data, but they are as important as items, because they make the relationship between items clear, by ways of grouping related items and differentiating different ones. Table 5 demonstrates Tuple.

**Table 5  XBRL programme view two**

| Prefix | Label / | Name | Data Type | Abstract | Substitutio... | Balance | Period Type | Nillable | Flag |
|---|---|---|---|---|---|---|---|---|---|
| uk-gaap-pt | Director or executive signing report | DirectorOrExecutiveSigningReport | Tuple | | xbrli:tuple | | | True | False |
| uk-gaap-pt | Director or executive's accrued lump sum p... | DirectorOrExecutivesAccruedLumpSumPensionEntitlem... | Monetary | False | xbrli:item | | Duration | True | False |
| uk-gaap-pt | Director or executive's benefits | DirectorOrExecutivesBenefits | Monetary | False | xbrli:item | Debit | Duration | True | False |
| uk-gaap-pt | Director or executive's benefits under long... | DirectorOrExecutivesBenefitsUnderLongTermIncentive... | Monetary | False | xbrli:item | Debit | Duration | True | False |
| uk-gaap-pt | Director or executive's bonus | DirectorOrExecutivesBonus | Monetary | False | xbrli:item | Debit | Duration | True | False |
| uk-gaap-pt | Director or executive's expense allowances | DirectorOrExecutivesExpenseAllowances | Monetary | False | xbrli:item | Debit | Duration | True | False |
| uk-gaap-pt | Director or executive's fees | DirectorOrExecutivesFees | Monetary | False | xbrli:item | Debit | Duration | True | False |

The code for the first tuple is shown in Table 6.

**Table 6  XBRL coding sample two**

```
<element id= "ci_DirectorOrExecutiveSigningReport" name= "directorOrExecutiveSigningReport"
substitutionGroup= "xbrli:tuple" nillable= "true">
  <complexType>
 </complexContent>
        <restriction base= "anyType">
          <sequence>
<element ref= "ci:DirectorOrExecutivesName"/>
   <element ref= "ci:DirectorOrExecutivesPosition" />
</sequence>
 <attribute name= "id" type+ "ID" use= "optional"/>
</restriction>
</complexContent>
</complexType>
</element>

<element name= "DirectorOrExecutivesName" id= "ci_DirectorOrExecutivesName" type=
"xbrli:stringItemType" substitutionGroup= "xbrli:item" nillable= "true" xbrli:periodType=
"duration"/>
<element name= "DirectorOrExecutivesPosition" id="ci_DirectorOrExecutivesPosition" type=
"xbrli:stringItemType" substitutionGroup= "xbrli:item" nillable= "true" xbrli:periodType=
"duration" />
```

The simple rule in xbrl/xml code writing is to start with <definition> and end with </definition>. The computer reads it in this way so that it can know when the command starts and when it stops, and in which scope. Also, if reference <element ref=../> is used in the middle of an element script, then the reference item has to be defined before or after. Otherwise, the code may not work.

**Dimension** is slightly different from item and Tuple and it may be more complex. However, it is a combination of both item and Tuple, with many features similar to Tuple. The section below introduces the idea and functionalities of this new XBRL element, ignoring the code for simplicity.
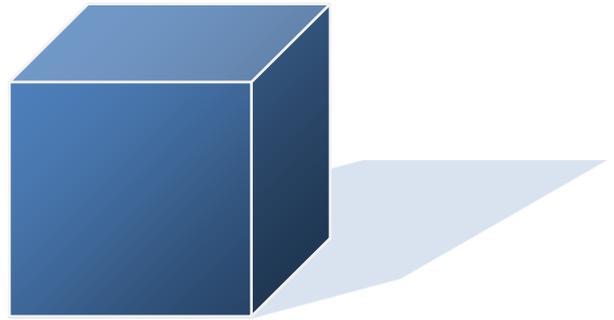
Look at the cube in Figure 3. Sometimes it is needed to investigate different multiple feathered data front aspects; for instance, watching the cube from difference dimensions. For instance, when examining a sale report of an international company, the data can be grouped by: year, geographical region, and business segment.

On paper and current Microsoft Excel tables, it can only display two 'dimensions'. In addition, changing different dimensions to display the data could add a large amount of extra work. Some presentation software may help improve the ease of displaying, such as Quantrix Modeller, but now, with XBRL, the ways of managing dimensional data will change from the essence. Still, in the book *Financial Reporting Using XBRL* by Charles Hoffman (2006, p.383), being "the father of XBRL", the structure of an XBRL dimensions are disclosed as: *A entity and the business segments and/or geographic segments of the entity, A comparison of the "actual", "budgeted", and the "variance" between the actual and budgeted figures. A breakdown of sales and the breakdown of that class of sales by product, by price band, by region, or other special features*. XBRL dimensions can group XBRL items like tuples. Therefore, whether or not Tuples should be kept after applying dimensions is still being critically discussed.

**Instance Document**

The instance document contains actual financial reporting data and context information related to it. For example, the value of land in 2010 in Table 2.02 is 3,235. This value in an instance document shall also contain the period 2010, the unit "'000", and the type of currency "£".

Currently, an XBRL instance document is still an XML file format. The difference between an XBRL instance document and a normal XML document is that all financial reporting terms used in XBRL in the stance document are from XBRL taxonomy. In addition, XBRL instance documents cannot yet be displayed by the current version of Microsoft Excel, but by XBRL application software.

Examples of some actual instance documents can be downloaded at: http://www.sse.com.cn/sseportal/webapp/datapresent/SSEXBRLFileListAct This web link is a page of downloadable instance documents of companies that registered in the Chinese Stock Exchange market from 2006. A screenshot of the first document on UBmatrix is shown in Figure 4.

**Figure 4  XBRL programme window view**
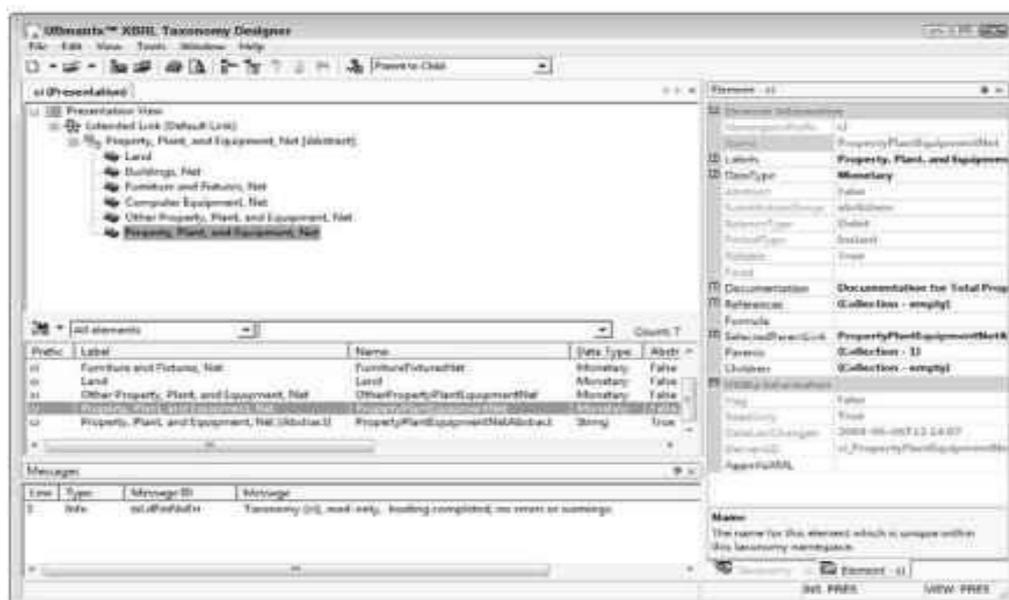
More specifically, detailed properties of items shall be filled in an instance document. These properties are: **Context,** describes the **entity, entity segment, period** and **scenario** a fact value is associated with. This is required by XBRL validation rules. Amongst these, period is a date data type, describing the period which the fact value relates to (such as: "for the month ended May 31, 2010). Scenarios can be assigned as "actual", "budgeted", "pro forma", "restricted", "unrestricted" etc. Its code is like the XML shown in Table 7.

**Table 7  XBRL coding sample three**

```
<context id="I-2007">

  <entity>
    <identifier scheme= http://www.DreamingWebsite.Com>SAMP<identifier>
      <segment>
        <segments:ReportingSegments><segments:Group
/></segments:ReportingSegment>
      </segment>
  </entity>

  <period>
    <instant>2007-05-31</instant>
  </period>

  <scenario>
      <scenarios:ReportingScenario><scenarios:Actual
/></scenarios:ReportingScenario>
  </scenario>

</context>
```

**Units** describe the unit of measurement that reported fact value uses. This property is optional. International currency codes are used. For example, British Pound is assigned as "GBP", Chinese Yuan is assigned as "RMB", etc. Its code is just one element short (Table 8).

**Table 8  XBRL coding sample four**

```
<unit id= "U-Monetary">
    <measure>iso4217:EUR</measure>
<unit>
```

**Fact Values** describe the actual numerical data that an XBRL item has. Table 9 provides an example showing the concept "Fact Values" and the summary concept that contains Concept that is used for Taxonomy, Context/ContextRef, Unit/UnitRef and Decimals and Footnotes. The code of a Tuple shows fact values.

**Table 9  XBRL coding sample five**

```
<uk-gaap-pt:Director>
   < uk-gaap-pt:Name contextRef= "I-2007">Felix</ uk-gaap-pt:name>
   < uk-gaap-pt:Salary contextRef= "I-2007"  unitRef= "U-Monetary"
decimals= "INF"> 2000 </ uk-gaap-pt:Director>
</uk-gaap-pt:Director>

<uk-gaap-pt:Director>
   < uk-gaap-pt:Name contextRef= "I-2007">Jane</ uk-gaap-pt:name>
   < uk-gaap-pt:Salary contextRef= "I-2007"  unitRef= "U-Monetary"
decimals= "INF"> 3000 </ uk-gaap-pt:Director>
</uk-gaap-pt:Director>
```

**Business Rules**

Officially, Business Rules only imply the rules of relationship between factual data in instance documents, which is a similar meaning of the Calculation.

*Calculation* Calculation defines the logical calculation relationship among factual data in the instance document (Figure 5). They are originally defined with taxonomy and terms in special business fields. For example, in a balance sheet, the total of debt shall be equal to the total of credit in absolute value but with opposite sign. Another example is some XBRL terms (normally with "total" in their name) which are the aggregate term of a few sub terms, where this relationship shall also be reflected by calculation. More complex relationships, such as the calculation of

periodical interest rate, are also available. However, in the current development status of XBRL, only sums and a few multiplication calculations are used frequently. In XBRL software, it would normally show a(1) or (-1) in front of terms in order that both people and computers know that the father term of items is equal to the sum of all the terms on the lower lever.

**Figure 5   XBRL program view three**
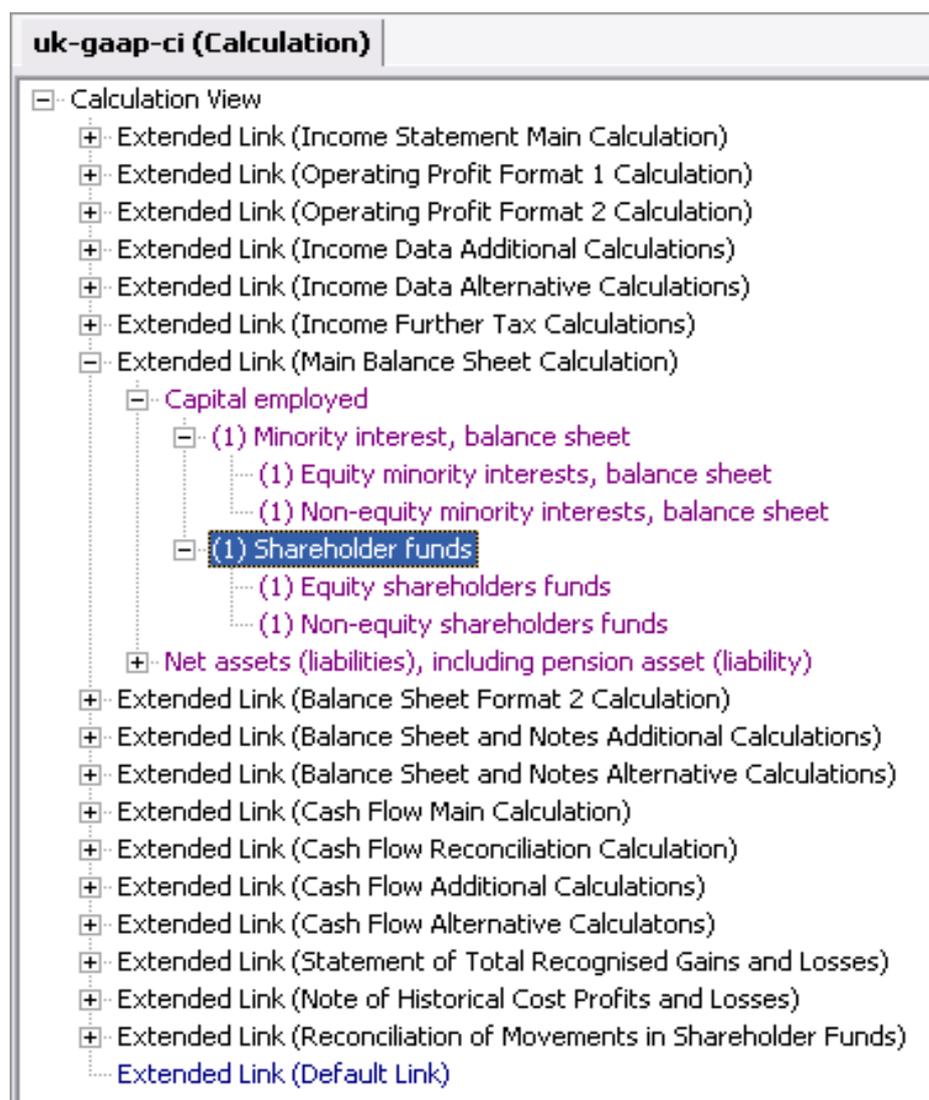


*Presentation*

The Presentation also has a tree shape. However the relationship between the trunk and branches of these trees is merely for the convenience of viewing. The upper tree collects all related item in the financial data with

a 'total' element as the last item of the presentation tree. There is no calculation signs in front of items, and upper items are normally abstract (they do not contain real value). The positions of items are in similar locations to the structure of a normal financial statement. The current UK GAAP taxonomy's Presentation links looks like Figure 6 in an UBmatrix interface.

**Figure 6 XBRL program view four**
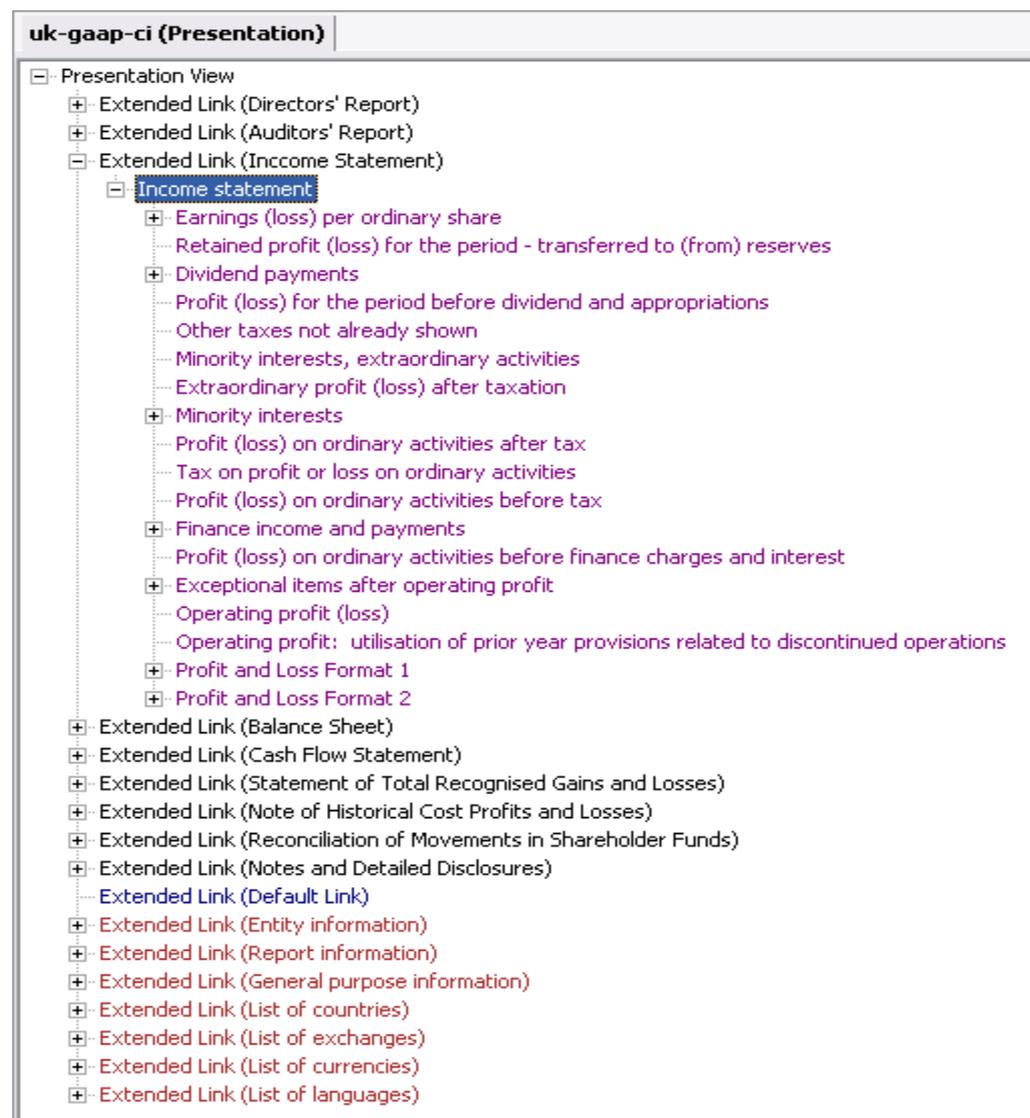


### Definition

The definition tree indicates the mechanism of the financial reporting items in the theory. For example, in the first example about property, plant and equipment, they can now be differentiable in terms of being depreciable

and non-depreciable. This helps the users of XBRL to understand financial theories better and therefore report and use financial information more efficiently. A part of the definition view of current UK GAAP taxonomy is presented, just to demonstrate the differences between presentation and calculation.

**Figure 7 XBRL program view five**
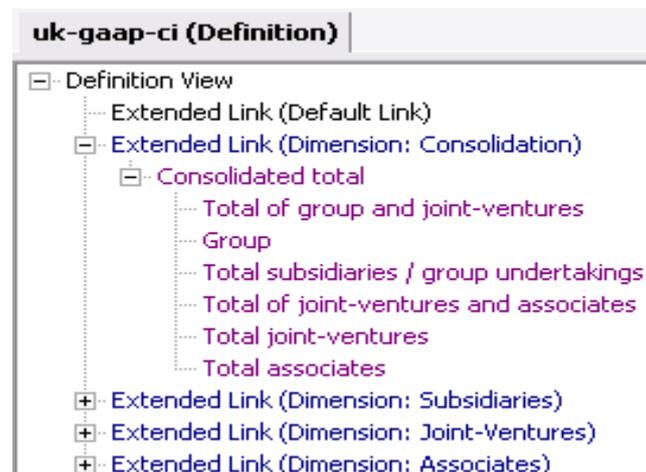


There are other concepts in XBRL such as Linkbase Reference Roles (Figure 7), Label Roles and Reference Roles which a normal user might see but will not have direct contact with. The still possible values of these roles in a FRTA compliant taxonomy are listed here.

XBRL Arcroles: labelArc, referenceArc, presentationArc, definitionArc.

Linkbase Reference Roles: calculationLinkbaseRef, definitionLinkbaseRef, labelLinkbaseRef, presentationLinkbaseRef, referenceLinkbaseRef.

Reference Roles: reference, definitionRef, disclosureRef, mandatoryDisclosureRef and recommendedDisclosureRef;

Label Roles: label, terseLabel, verboseLabel, positiveLabel, positveTerseLabel, positiveVerboselabel, negativeLabel, negativeVerboseLabel, zeroLabel, zeroTerseLabel, zeroVerboseLabel,

totalLabel, periodStartLabel, periodEndLabel, documentation, definitionGuidance, disclosureGuidance, presentationGuidance, placementGuidance, measurementGuidance, commentaryGujidance and exampleGuidance. Each role above has http://www.xbrl.org/2003/role attached to the beginning of the role.

The function of XBRL software is to utilise features of XBRL files. These include Viewing and Creating XBRL Taxonomy, View and Creating XBRL Instance Document, Validating XBRL Taxonomy and Instance Documents, and widely using XBRL instance document data to assist preparation and analysis of financial reports.

**Figure 8  XBRL program view in Microsoft Excel**



|  | | 2007 | 2006 |
|---|---|---|---|
|  | | £'000 | £'000 |
| | Land | 3,235 | 2,654 |
| | Buildings | 185,654 | 163,357 |
| | Furniture and Fixtures | 28,568 | 31,986 |
| | Computer Equipment | 6,231 | 4,344 |
| | Others | 4,564 | 7,568 |
| | Total | 228,252 | 209,909 |

Here UBmatrix XBRL mapping software is introduced. The main reasons for introducing this software are as follows. Firstly, UBmatix was one of the earliest available commercial software that included most functions needed to create an XBRL formatted financial report. For example, taxonomy extension, instance document creation and validation. Secondly,

UBmatrix prevents other XBRL application software from entering the market-place (Stantial, 2007). Finally, it is used by most early EDGAR Online filings (Phillips, Bahmanziari & Colvard, 2008).

**Figure 9  XBRL element structure**

| ID | Bal | Per | Nil | Type | NS | Name/Labels/Documentation |
|----|-----|-----|-----|------|-----|---------------------------|
| 1 | D | I | T | Monetary | ci | Building<br>Building(en, Standard Label)<br>Documentation for Building |
| 2 | D | I | T | Monetary | ci | ComputerEquipment<br>Computer Equipment (en, Standard Label)<br>Documentation for Computer Equipment |
| 3 | D | I |  | (String) | ci | *DepreciableClasses*<br>Depreciable Classes (en, Standard Label)<br>Documentation for Depreciable Classes |
| 4 | D | I | T | Monetary | ci | FurnitureFixtures<br>Furniture Fixtures (en, Standard Label)<br>Documentation for Furniture Fixtures |
| 5 | D | I | T | Monetary | ci | Land<br>Land(en, Standard Label)<br>Documentation for Land |
| 6 |  | I |  | (String) | ci | *NonDepreciableClasses*<br>Non-Depreciable Classes (en, Standard Label)<br>Documentation for Non-Depreciable Classes |
| 7 | D | I | T | Monetary | ci | Others<br>Others(en, Standard Label)<br>Documentation for Others |
| 8 |  | I |  | (String) | ci | *PropertyPlantEquipment*<br>Property Plant and Equipment (en, Standard Label)<br>Documentation for Property Plant and Equipment |
| 9 | D | I | T | Monetary | ci | TotalPropertyPlantEquipment<br>Total Property Plant and Equipment (en, Standard Label)<br>Documentation for Total Property Plant and Equipment |

However, XBRL follows the steps outlined below. First of all, examining the financial data in an **'XBRL way'**. In Figure 8, there are six Concepts to be expressed; each has two values in different Periods, while the Unit type is British pound and in thousands. Then, we find corresponding **Concepts** in the Taxonomy, shown in Figure 9.

The presentation and definition of the data are then constructed (shown in Figure 10). The left side of Figure 10 demonstrates the presentation view and the right side demonstrates the definitions view.

**Figure10  XBRL definition presentation sample**
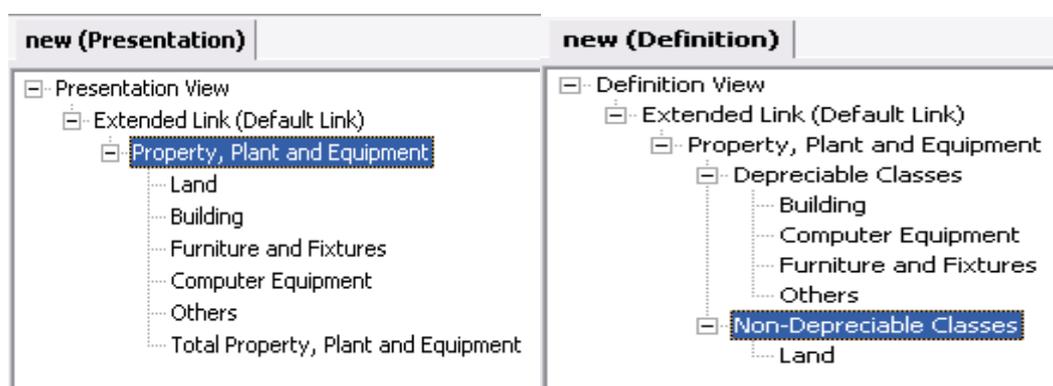


The completed instance document code is shown in Table 10.

**Table 10  XBRL coding sample six**

```
<?xml version="1.0" encoding="utf-8"?>
<!-- Created by Charles Hoffman, CPA< UBmatrix: 2005-02-01 -->
<xbrl xmlns="http://www.xbrl.org/2003/instance"
      xmlns:xlink="http://www.w3.org/1999/xlink"
      xmlns:link="http://www.xbrl.org/2003/linkbase"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xmlns:ci="http://www.UBmatrix.com/Patterns/BasicCalculation"
      xmlns:scenarios="http://www.xbrl.org/frta/scenarios"
      xmlns:ios4217="http://www.xbrl.org/2003/iso4217"
      xsi:schemaLocation="http://www.UBmatrix.com/Patterns/BasicCalculation
BasicCalculation.xsd
http://www.xbrl.org/frta/scenarios senarios.xsd">

<link:schemaRef xlink:type="simple" xlink:href="BasicCalculation.xsd" />

<context id="I-2003">
    <entity>
```

```xml
        <identifier scheme="http://www.SampleCompany.com">SAMP</identifier>
      </entity>
      <period>
          <instant>2003-12-31</instant>
      </period>
<scenario>
    <scenarios:ReportingScenrio> <scenarios:Actual />
</scenarios:ReportingScenrio>
</scenario>
</context>
<context id="I-2002">
    <entity>
        <identifier scheme="http://www.SampleCompany.com">SAMP</identifier>
      </entity>
      <period>
          <instant>2002-12-31</instant>
      </period>
<scenario>
    <scenarios:ReportingScenrio> <scenarios:Actual />
</scenarios:ReportingScenrio>
</scenario>
</context>
<unit id="U-Monetary">
    <measure>iso4217:EUR</measure>
</unit>

<ci:Land contextRef="I-2003" unitRef="U-Monetary" decimals="INF">
5347000</ci:Land>
<ci:Land contextRef="I-2002" unitRef="U-Monetary" decimals="INF">
1147000</ci:Land>


<ci:Building contextRef="I-2003" unitRef="U-Monetary" decimals="INF">
244508000</ci:Building>
<ci:Building contextRef="I-2002" unitRef="U-Monetary" decimals="INF">
366375000</ci:Building>

<ci:FurnitureFixtures contextRef="I-2003" unitRef="U-Monetary"
decimals="INF">34457000</ci: FurnitureFixtures>
<ci:FurnitureFixtures contextRef="I-2002" unitRef="U-Monetary"
decimals="INF">34457000</ci: FurnitureFixtures>

<ci:ComputerEquipment contextRef="I-2003" unitRef="U-Monetary"
decimals="INF">4169000</ci:ComputerEquipment>
<ci:ComputerEquipment contextRef="I-2002" unitRef="U-Monetary"
decimals="INF">5313000</ci:ComputerEquipment>

<ci:Other contextRef="I-2003" unitRef="U-Monetary" decimals="INF">
6702000</ci:Other>
<ci:Other contextRef="I-2002" unitRef="U-Monetary" decimals="INF">
```

```
6149000</ci:Other>

<ci:TotalPropertyPlantEquipment contextRef="I-2003" unitRef="U-Monetary"
decimals="INF">295183000</ci:TotalPropertyPlantEquipment >
<ci:TotalPropertyPlantEquipment contextRef="I-2002" unitRef="U-Monetary"
decimals="INF">413441000</ci:TotalPropertyPlantEquipment>

</xbrl>
```

The coding is normally highlighted in programming software, in order to distinguish between function codes and content codes. Real codes in computer are just plain text.

Actual financial reporting data will be far more complex than the example given, while the relationship between items used are also complicated. Fortunately, business rules are normally already set up by official and agencies with common taxonomy. Therefore, it is easy to verify this type of errors. In order to show the dynamics behind these validation software and online services, the following section will set up a sample rule and validate its instance document here. If the data in the sample report is correct, the instance document shall hold calculation rules as demonstrated in Figure 11.
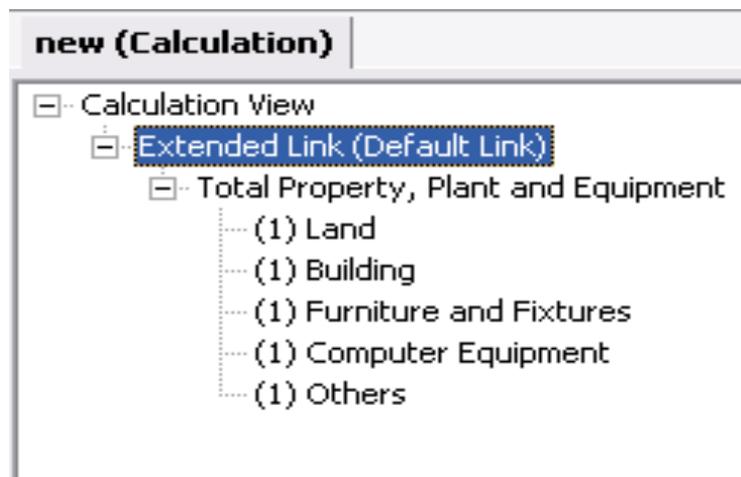


**Figure 11  XBRL programme view six**

It firstly requires validation with XBRL specifications, shown in Figure 12. Then, the validation software runs calculations, shown in Table 11.

The result of Table 11 implies that the calculation is consistent and there is no error in the instance document. This validation function is one of the most useful parts of XBRL. This function reduced final errors, but increases complexity in the process of validating Taxonomy, Instance Document and its Calculation rules. However, in the future, when the software supporting for XBRL becomes more and more mature, all XBRL reporting procedures shall turn out to be simpler and simpler. Figure 13 demonstrates another two convenient functions enabled by XBRL.

**Figure 12  XBRL program view seven**

| Line | Type | Message ID | Message |
|------|------|-----------|---------|
| 1 | Info | Info | Validating Taxonomy (ci)… |
| 2 | Info | Info | Instant Sample was XML, XBRL validated without any error |
| 3 | Info | Info | XML schema-level validation of taxonomy Sample.xsd succeeded |
| 4 | Info | Info | Validating linkbase Sample-label.xml |
| 5 | Info | Info | XML-level validation of linkbase Sample-label.xml succeeded |
| 6 | Info | Info | Validating linkbase BasicCalculation-presentation.xml |
| 7 | Info | Info | XML-level validation of linkbase Sample-presentation.xml succeeded |
| 8 | Info | Info | Validating linkbase Sample-calculation.xml |
| 9 | Info | Info | XML-level validation of linkbase Sample-calculation.xml succeeded |
| 10 | Info | Info | Validating linkbase Sample-definition.xml |
| 11 | Info | Info | XML-level validation of linkbase Sample-definition.xml succeeded |
| 12 | Info | Info | Validating Taxonomy (ci) on XBRL-level… |
| 13 | Info | Info | XBRL-level: Checking Cycles… |
| 14 | Info | Info | Taxonomy (ci) XML, XBRL validation completed: 0 errors, 0 warnings |
| 15 | Info | Info | XBRL Instance Validation of C:\CurrentFolder\XBRL Samples\Sample-instance.xml |
| 16 | Info | Info | Taxonomy: ci (Sample.xsd)<br><br>Referenced Taxnomies:<br><br>(none) |

Table 11  XBRL programme view seven

| Line | Label | W | B | D-P | Value | Source | Message |
|---|---|---|---|---|---|---|---|
| **1** | *Calculations, All* [http://www.xbrl.org/2003/role/limk] | | | | | | |
| **2** | Context *I-2002* [at 2002-12-31 for SAMP Scenario 1] | | | | | | |
| **3** | **U-Monetary** | | | | | | |
| **4** | **ci:TotalPropertyPlant Equipment** | | **D** | **INF** | **413,441,000** | **both** | **ok** |
| 5 | ci:Land | 1 | D | INF | 1,147,000 | inst | |
| 6 | ci:Building | 1 | D | INF | 366,375,000 | inst | |
| 7 | ci:FurnitureFixture | 1 | D | INF | 34,457,000 | inst | |
| 8 | ci:ComputerEquipment | 1 | D | INF | 5,313,000 | inst | |
| 9 | ci:Other | 1 | D | INF | 6,149,000 | inst | |
| | | | | | | | |
| **10** | **Context *I-2003* [at 2003-12-31 for SAMP Scenario 1]** | | | | | | |
| **11** | **U-Monetary** | | | | | | |
| **12** | **ci:TotalPropertyPlant Equipment** | | **D** | **INF** | **295,183,000** | **both** | **ok** |
| 13 | ci:Land | 1 | D | INF | 5,347,000 | inst | |
| 14 | ci:Building | 1 | D | INF | 244,508,000 | inst | |
| 15 | ci:FurnitureFixture | 1 | D | INF | 34,457,000 | inst | |
| 16 | ci:ComputerEquipment | 1 | D | INF | 4,169,000 | inst | |
| 17 | ci:Other | 1 | D | INF | 6,702,000 | inst | |

**Figure 13  XBRL program view on Microsoft Excel, Web and PDF**



1.  Viewing XBRL Tags in Excel
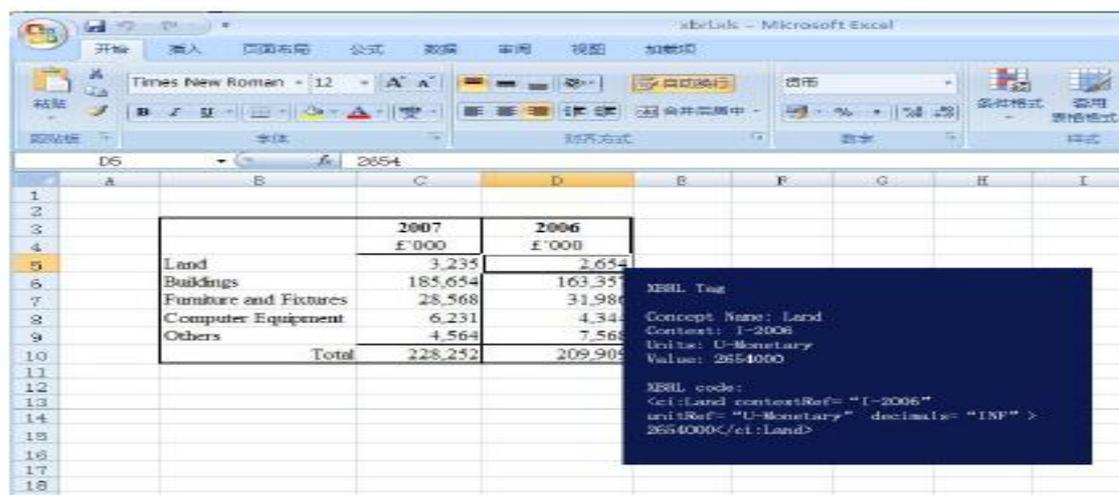
2.  Saving and Output financial data in different formats: html, pdf, word , etc..
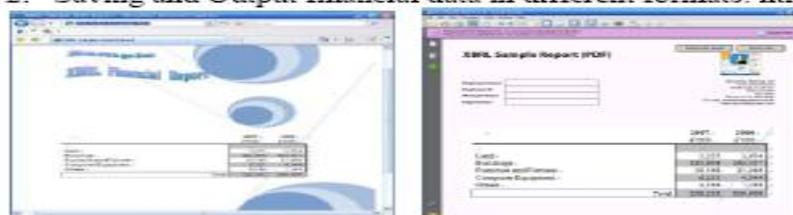
This function shortens the distance between preparing financial data and publishing the data to various financial data users and for various purposes.

Briefly speaking, XBRL is a very simple but powerful tool and it will change the current financial reporting environment, making it become more 'digital' (Allport & Pendley, 2010). The purpose of designing XBRL is to improve the efficiency and accuracy of all sectors of financial reporting and analysis work, while making quality financial data more accessible, standardised and usable. Most probably in the near future, the potential of manipulating XBRL financial reporting data with artificial intelligent business software could open a new era for the financial activities of modern life.

One of the biggest features, as well as the benefits of XBRL, is that XBRL formatted financial reporting is network-based. A few developers in pioneer XBRL adoption have already utilised simple version of XBRL web filing and assistant analysis software. The future of an ideal web-based XBRL software system is still under development. Most software designers, who only have good knowledge of computers, or professional accountant, financial information users and academics who only know about finance and accounting theories, would have no idea of what kind of web system can best take advantage of XBRL formatted financial data. They would therefore struggle to provide the best applications for professional accountants and wide financial information users. The next part of the study will explore XBRL web-based application software design and the possible impact on future financial reporting.

The current XBRL Web Engineers Structure, such as in the US EDGAR online system, the Shanghai Stock Exchange System and South Korean DART system, is mostly written in simple Java scrip to perform basic XBRL formatted financial data filing, performing side to side comparison

of statistic data, which is then demonstrated with trend graphics for ease of comparison and calculation (Figure 14).

**Figure 14  XBRL web engineering structure - 01**
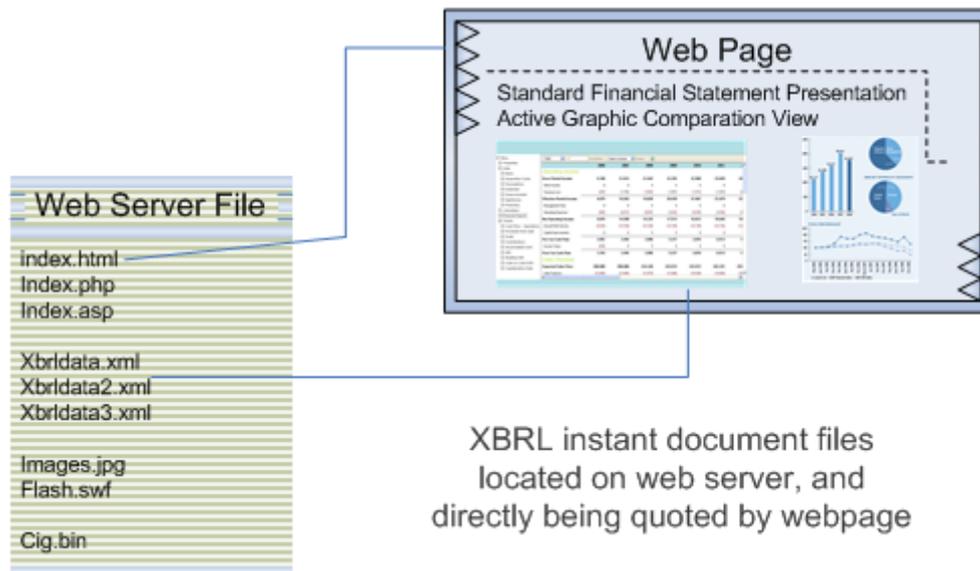


In particular, group one of the Chinese Stock Exchange system is of this structure, with raw XBRL files and linked web presentation files stored directly on the standard web server. This would have the advantage of: (1) being easy to construct; (2) demanding less requirements of the server; (3) ensuring easier communication; (4) ensuring that 'what we have is what you've got'.

The above thus constitutes the commonly used structures in early XBRL adoption stage for most XBRL pioneer countries because of the simplicity of structure and the minimum cost. Any website constructor can easily put XBRL formatted data on standard web space with interface web pages. However, this type of structure is easily exposed to security problems. In other words, the data in this type of XBRL system is easily hacked and can be modified by unauthorised visitors. Moreover, this structure constitutes

serious problems in system updating, as only the server administrator may upload web data management, while it is normally the data managers who deal with this data.

As a result, a more useful web engineering system would be demanded for more powerful applications. The diagram below shows a structure of a more advanced system with an additional XBRL specialised database and an added secure server on the web page interface side (Figure 15).

**Figure 15  XBRL web engineering structure - 02**
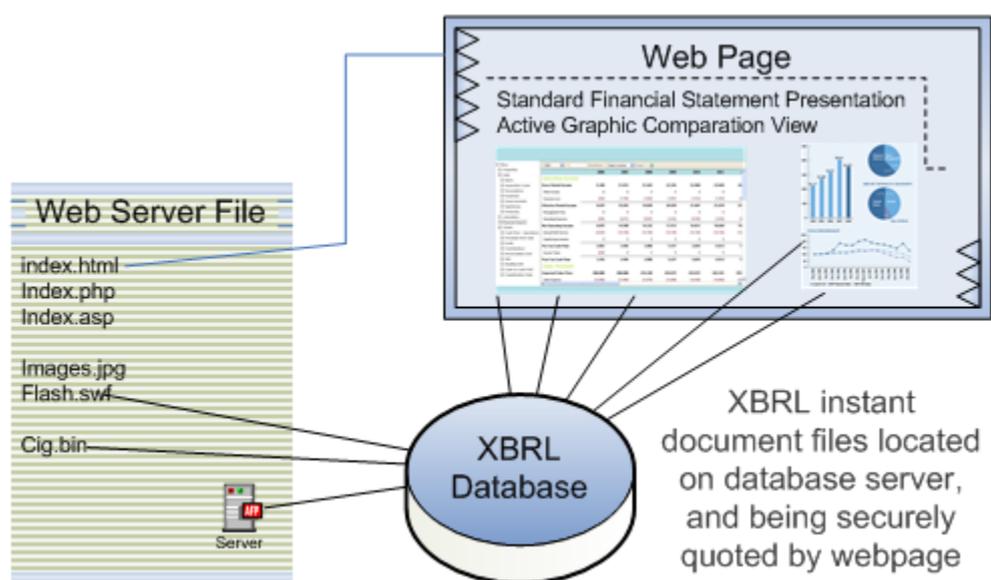


In this system structure, the XBRL server interface management can be separated from database management. The separated XBRL database would ensure the security of XBRL data, and the separated web server files would solve updating problems in the previous structure. There would be better communication between the database managers and web administrator, as well as the flexibility to keep developing better user interface for XBRL financial information users.

Nevertheless, this system would have the disadvantage of being complicated to construct and being of a higher requirement for the web server comparing with previous web space-only based structure. In addition, due to the requirement of the current types of database server, XBRL formatted .xml files may have problems in re-translating XBRL data into the database format.

Therefore, this paper proposes a more ideal web engineering system, one which is integrated with on-site XBRL application, with live time monitoring function and international compatibility. Figure 16 below is the suggested structure of an advanced XBRL web system. It expands the role that external XBRL database would play with a governance filing and auditing server and an external web based XBRL software application server which can be delivered to individual accountants and other XBRL financial information users. In all, this structure is better connected with superior utilisation of XBRL database and software than the other two models.

First of all, the server system can be based in a Linux web host, one which runs PHP language, with other typical Linux scripts, such as Ruby on Rails+, Perl, CGI and CGI-BIN. The Linux system is commonly used in general European networks and have databases in MYSQL and PostgreSQL.

The other type of web server is ASP based on a Windows server, which is more commonly used in Asian countries than in Europe and America. The ASP server has less functional applications than PHP. However, ASP has better multimedia support, e.g. CGI, ASP/ASP.NET, Cold Fusion, MS Access with database in Microsoft SQL and ODBC/DSN (Figure 16).

**Figure 16  XBRL web engineering structure - 03**
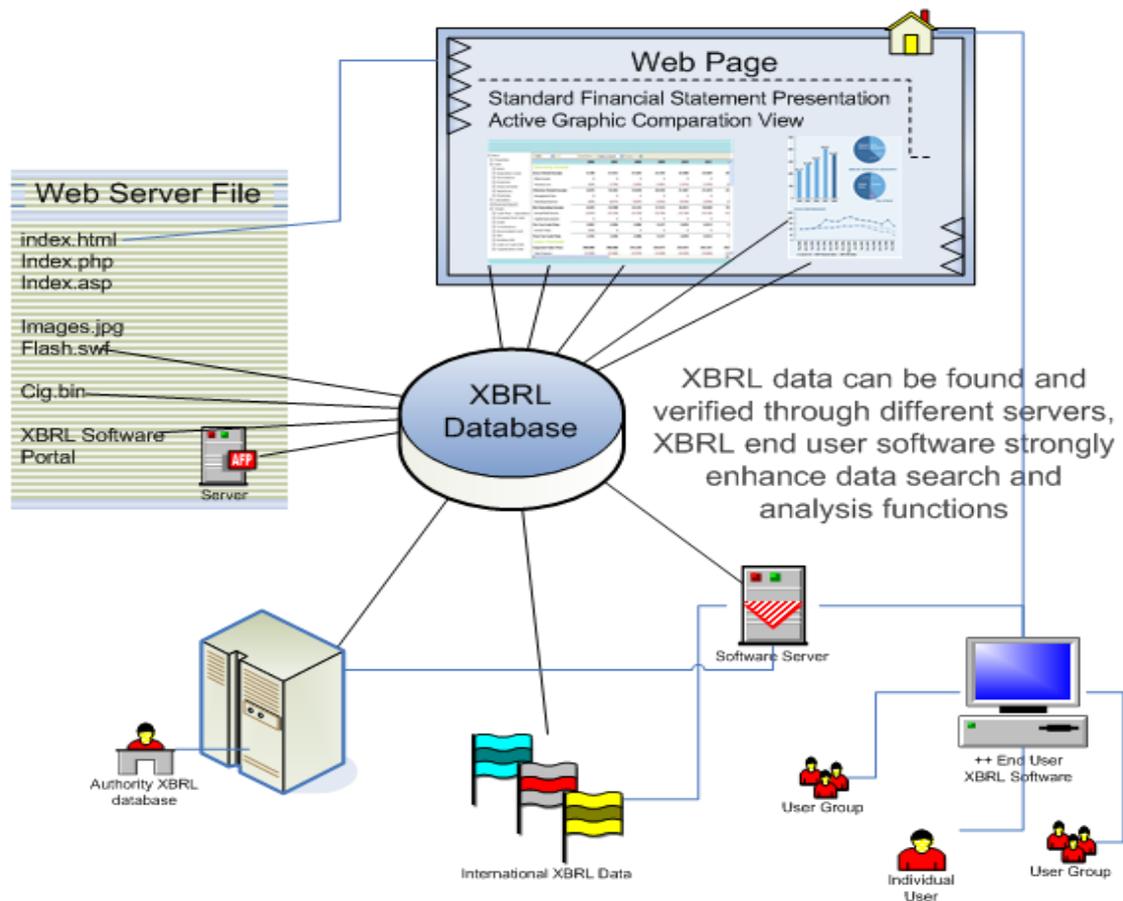


Flash and Shockwave are commonly used in web presentations for enhanced visual presentation. In the South Korean DART system, Flash was the graphic interface used for comparison between different company's financial reports in XBRL. This interactive interface has a better user experience than standard Java and statistic web application interface and is becoming more and more popular.

As far as security issues are concerned, Dedicated IPs, Shared SSL Certificate and SSL Secure Server can be embedded with server construction. Dedicated IP lets users identify the provider and they have better access than commonly sharing IP server. SSL confirms the believability of server provider and encrypts all communication between

server and site visitors, usually used in secure shopping and banking websites.

The final stage of data security is database backup, in the case of anything happening to the main server, therefore providing a copy before system crash or update. There are two ways to handle XBRL database back up: periodic manual copy and live time server synchronisation. Just with the management of normal server system with databases, users can copy and back up all server data into an offline server machine or another server connected at a period of time. Or, if affordable, the server machine can have a RAID system, which is an additional hard drive which copies and backs up all data in the main hard drive automatically. The server can also perform half-manual back-up to another online server database periodically if configured. Compared with each back up options, the data in offline manual backup is more secure, while RAID have more advantage in ensuring all the changes in the server have two copies. Although the last structure mentioned is already very robust, for larger companies, a structure similar to the private server system can be created to enhance the application of XBRL financial reporting.

An intranet system built with an XBRL database can provide the organisation with a much enhanced accounting experience. An intranet is a network system similar to the internet but connected only to local computers. It can work offline without the internet, or online with the internet to provide double connectivity. In addition, the intranet requires and depends on a local server to provide a host to the network. Host server machines can either run on a standard personal computer or a professional server machine. In both cases, the server computer or computers are required to be turned on all the time. Otherwise the intranet would not be

accessible, and guest computers relying on intranet to access the internet would also be unable to connect either to the internet or other local computers. All accountants and financial managers would be able to update and monitor the financial activities of the organization at any time. It would make internal accounting more manageable and secure, and make external XBRL financial reporting more convenient and reliable. XBRL database based on intranet system can provide the basis for a lot of powerful XBRL end user application software for accountants, finance managers and anyone with responsibilities related to finance in the organisation.

### 2.1.3 The adoption of XBRL around the world

The use of XBRL has been growing continuously since its public introduction in April 2000. In the US, the SEC has been encouraging electronic data gathering, analysis and retrieval (EDGAR) filers to voluntarily furnish XBRL-related documents as attachments to traditional EDGAR filings. More recently, the SEC has funded a 54 million dollar project to modernise EDGAR. XBRL is a key component of this modernisation and the mandatory filing of XBRL documents was phased in starting in 2009 (Gray & Miller, 2009).

**Table 12  XBRL Initial Steering Committee**

| | |
|---|---|
| AICPA (American Institute of Certified Public Accountants)<br>Knight Vale and Gregory CPA Firm<br>Arthur Andersen LLP<br>Deloitte & Touche LLP<br>E-content Company<br>Ernst & Young LLP<br>FreeEDGAR.com, Inc. (now Edgar Online, Inc.) | FRx Software Corporation<br>Great Plains<br>KPMG LLP<br>Microsoft Corporation<br>PricewaterhouseCoopers LLP<br>The Woodburn Group |

Table 12 is a list of early developers and anticipators of XBRL. Table 13 lists the members of the XBRL organisation classified by industry at the same period. They demonstrated the huge influence of XBRL.

**Table 13  Members of the XBRL Organisation Classified by Industry**

| Type of Industry | Number of Member Organizations |
|---|---|
| **Financial Services and Information Providers** | 36 |
| **Professional Services** | 32 |
| **Technology Enablers** | 56 |
| **Accounting and Trade Organizations** | 11 |
| **Government and Not-for-Profit** | 7 |
| **Other** | 33 |

(Source: Higgins and Harrell 2003. Original table with member names is attached in appendix C)

Now, in just a few years, the number of organisations that have become involved with XBRL has largely increased (the latest update at: http://www.xbrl.org/frontend.aspx?clk=uSLK&val=53 ; on 12th Feb 2010, there were 137 XBRL projects worldwide listed on XBRL International's project database). Major world economic regions and countries now have their own XBRL jurisdictions, and they have their own websites to publish the latest news of XBRL development in their region (Table 14).

**Table 14  XBRL official web resources**

| | |
|---|---|
| XBRL Australia | www.xbrl.org/au |
| XBRL Belgium | www.centraledesbilans.be |
| XBRL Canada | www.xbrl.ca |
| XBRL China | www.xbrl-cn.org |
| XBRL Denmark | www.xbrl.dk |
| XBRL Europe | www.xbrl.org/eu |
| XBRL France | www.xbrl.org/fr |
| XBRL Germany | www.xbrl.de |
| GRC-XML | www.xbrl.org/grc-xml |
| XBRL India | www.xbrl.org/in |
| International Accounting Standards Board | www.iasb.org/xbrl/index.html |
| XBRL Ireland | www.xbrl-ie.org |
| XBRL Italy | http://www.xbrl.org/it |
| XBRL Japan | www.xbrl-jp.org |
| XBRL Korea | www.xbrl.or.kr |
| XBRL Luxembourg | www.xbrl.org/lu |
| XBRL Netherlands | www.xbrl-nederland.nl |
| XBRL Poland | www.xbrl-pl.org |
| XBRL Romania | www.xbrl.org/ro |
| XBRL South Africa | www.xbrl.org/za |

| XBRL Spain | www.xbrl.es |
|---|---|
| XBRL Sweden | www.xbrl.se |
| XBRL Switzerland | http://www.xbrl-ch.ch |
| XBRL United Ara**bic** Emirates | www.xbrl.org/ae |
| XBRL United Kingdom | www.xbrl.org/uk |
| XBRL United States | www.xbrl.us |

<div align="center">(Source: xbrl.org, 2011)</div>

The XBRLplanet.net website has visualised a global map of XBRL adoption. The map is coloured according to jurisdiction, and indicators have been placed according to whether the country has mandatory filing programmes, voluntary filing programmes or are for the most part still under development. The map below is the latest screenshot of the web map page taken in June 2011 (Figure 17).

<div align="center">**Figure 17  XBRL adoption world map view**</div>



■ Full Jurisdiction ▣  ■ Provisional Jurisdiction ▣
📍 Mandatory Filing Programs ▣ 📍 Voluntary Filing Programs ▣
📍 Major Development Projects (Source: xbrlplanet.org, 2011)

To make this study more applicable, we include here a short analysis for the adoption situation of a few typical XBRL pioneer regions. We then examine the current XBRL adoption situation for the UK and a suggested implementation for the process is included in the end of this section.

The American Accounting Association was the first to start designing and implementing financial reporting target for the XML tagging language, which is called XBRL today. The US's XBRL adoption was implemented in two steps: the first volunteer programme and then the official EDGAR online filing. The first period of the volunteer programme gave companies a period of preparation before it became mandatory. At the same time, XBRL taxonomy and application software were kept updated. Companies using XBRL mapping services also started to appear.

In two years, EDGAR Online retired its voluntary XBRL filing and moved to the mandatory filing system. At this point, many companies with XBRL experience were already mature and could start filing in XBRL right always. With the improved quality of XBRL formatted financial reports, advanced XBRL data viewer and analysis tools, such as iMatrix and Dragon Tag, have also been well developed to elevate XBRL financial reporting to a new level.

So far, although the American XBRL filing system is already very advanced comparing with many other countries, XBRL adoption and application in the US is still in the early adoption stage. Full utilisation to release the power of XBRL financial reports is still some years in the future.

China has also started using XBRL relatively early  since 2005. China's Shanghai Stock Exchange system implemented the XBRL adoption in two

steps: pre-translating filing with raw XML and then using actual applications of XBRL data in 2008. With the use of a more serious XBRL application in banking and other finance sectors, XBRL has been included the government plan to open the digital revolution of the Chinese financial reporting system.

In both of the adoption stages in Shanghai Stock Exchange system, XBRL was made mandatory in the filing system. However, 'mandatory' may have different meanings in different countries and particularly in this case. Here, even the official Shanghai Stock Exchange system required that all reports must be in the XBRL format, while the actual operation was just an XBRL translation added from previous non-XBRL reports. Moreover, in the first step of Chinese XBRL adoption, those XBRL formatted files have very low quality, all of which were only displayed on the official website in the raw format. However, this first 'mandatory' step gave most companies a buffer time to get to know more about XBRL and be better prepared for XBRL financial reporting. XBRL mapping service companies and software application had also started to appear. In 2008, the Shanghai Stock Exchange applied a functional web XBRL data management system. China entered the early adoption stage from this step.

Currently, many Chinese companies are still using out-sourcing companies to perform the creation of XBRL formatted financial reports from traditional reports, instead of creating them directly via internal company accountants.

South Korean started XBRL adoption later than the US and China. However, it only took them one step, being that they were well prepared from the beginning to put XBRL into functional usage. The earliest Korean

XBRL database was created in October 2005, and the DART system has been logging financial report data in XBRL since 2007. The web XBRL data managing system was already very advanced when it started. Moreover, DART had implemented offline and online financial report filing in Korean language before using the English system. These active web analysis tools with friendly graphic features have definitely shown the power of XBRL data, and attracted international investors to those companies who reported in the XBRL format. Figure 18 demonstrates the XBRL adoption structure of DART.

**Figure 18  DART database system structure**
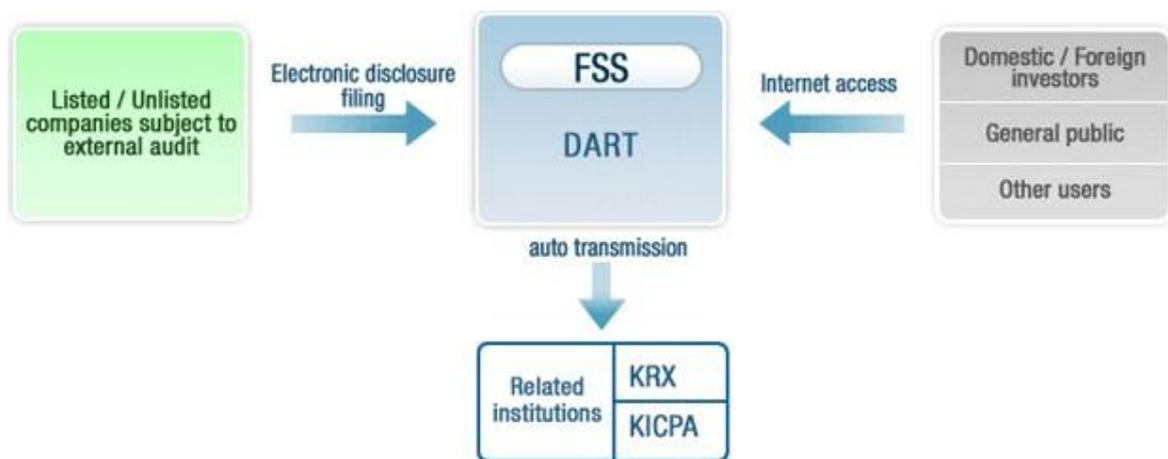


(Source: DART, 2009)

The situation in the UK is very different, however, being that the British government announced that, from 2010 March, all XBRL-based Tax Filing would become mandatory. They used an online XBRL approach, which constrains both data style and data format. In regard to the successful adoption cases of the other countries mentioned above, it can be concluded that most countries had a two to three year preparation stage before being able to adopt XBRL properly. Moreover, there is the fact that there are still currently very few accountants who know about XBRL or have any knowledge of how to create an XBRL formatted financial statement.

## 2.2 The quality of Financial reports in XBRL format

An important requirement of this study is to specify the characteristics of a good financial report, in order to construct a statistic model to assess the quality of financial reports. Normally, the criteria for the quality of financial reports are defined by the purpose of financial reporting, despite the evolution and technological applications of financial reporting. These definitions also differ according to information users, environment and objectives at different times.

There is, however, a general agreement that accounting and other financial data should have certain characteristics. The Financial Accounting Standards Board's Statement of Financial Accounting Concepts No.2, "Qualitative Characteristics of Accounting Information" (FAC2), creates two groups of these characteristics under the headings "Relevance" and "Reliability". These groupings are appropriate because, in many cases, the format and content of accounting data require a trade-off between the two. Certainly financial analysts desire information that is both relevant and reliable, but their bias is towards relevance (Orenstein, 2005). In short, analysts prefer information that is equivocally right rather than precisely wrong. Inexact measures of contemporaneous economic values are generally more useful than fastidious historic records of past exchanges. Therefore, Jara et al. (2011) defined those characteristics as: Relevance, Reliability-General, Reliability-Verifiability, Reliability-Representational Faithfulness, Timeliness (as a subset of relevance), and Neutrality.

AICPA agreed with these terms in the relevance, reliability and comparability of information. Yet, it expands the subsets in terms of Reliability - neutrality, the role of conservatism and validity; and

Comparability – inter-firm comparability, inter-period consistency and internal consistency.

Yet the most practical and relevant characteristics framework is the International Financial Reporting Standard. IFRS has been required to be used for all listed EU companies since 2005. China has also applied this new rule since January 2007. The US Financial Accounting Standards Board (FASB) agreed to harmonize their agenda and work towards reducing differences between IFRS and US GAAP in 2002, but would allow some companies to report under IFRS in 2010 and require it of all companies by 2014. Australia issued 'Australian equivalents to IFRS' (A-IFRS) in 2006. Turkey is also one of the early adopters of IFRS since 2006. Finally, Canada, Russia, Japan, India and a few other countries are planning to use IFRS by 2011. This indicates a trend towards the international harmonisation of financial reporting system, which will enable and enhance global financial reporting via the internet and adoption of XBRL (Bizarro & Garcia, 2011). Therefore, this thesis will mostly use financial reports under IFRS as samples of the research. In addition, IFRS also defined qualitative characteristics of financial statements, which includes: comprehensibility, relevance, reliability, comparability, materiality, neutrality, substance over form, faithful representation, prudence and predictability.

### 2.2.1 Benefits of XBRL promoted by XBRL international

The XBRL.org website points out that XBRL can provide a cost reducing, faster, more reliable and more accurate handling of data, along with improved analysis and a better quality of information and decision making.

They think XBRL can offer major benefits to all stages of business reporting and analysis.

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

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

Faster: XBRL financial data can mostly be stored on a web-server, so financial bodies can 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: XBRL can make financial reporting more reliable and accurate when computer software takes charge of the process of creating most of the financial data report, and in terms of reducing manual cheating or mistakes. However, when considering large numbers of computing bugs, virus and wide scale of software failure and power surcharge etc, over-reliance on XBRL based computer software can result in a high risk of dysfunctional hazard, which will be discussed in the next part of this chapter.

Analytical: Different from the previous, original XML language, XBRL has already defined original meanings for each data instance. Computer software can then know where to input this data for certain programmed financial theory based calculations and for the output desired as an analytical result for end users. This is especially useful for non-professionalised financers and can also 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 professionalised and structured; computers can improve accuracy and provide a certain level of supportive analysis for financial data. Yet, unavoidably, there will always be some aspects that that the computers more or less cannot cover and cannot do as intelligently as humans. The quality of decision-making has improved when considering the availability of more reference information, or on the conditions where the end user has far less financial knowledge than the software.

### 2.2.2 Errors revealed in XBRL SEC Fillings

Since the Securities & Exchange Commission (SEC) issued its XBRL Reporting Mandate in 2009, more than 9,500 publicly traded companies have submitted approximately 78,000 filings. Despite these impressive numbers, the error rate in these filings is undermining the accuracy of the reports. More than 1.4 million errors had been reported as of August 2013. As Trevor Harris and Suzanne Morsfield said in their December 2012 report, "An Evaluation of the Current State and Future of XBRL and Interactive Data for Investors and Analysts", some companies are reluctant

to use the mandate's XBRL-tagged data because "the reliability of the data is poor and this is a potentially fatal shortcoming of the SEC's mandate, if not addressed quickly and meaningfully" (Brands, 2013a, p56). This report took a look at the causes of the error rates, the implications for filers and investors, and potential solutions

Several factors affected the accuracy of the mandate's initial filings. While the initial 2009 U.S. GAAP taxonomy (UGT) had approximately 15,000 accounting elements, many common elements used in financial reporting were missing. The learning curve for the 2009 UGT was steep, and the taxonomy was difficult to use. This caused filers to create extensions (custom elements) if they could not find what they were looking for or if the tag didn't exist. For example, a large pizza chain couldn't find the reporting elements it used on its financial statements and instead created 80% of the extension element tags for its filings. The companies did not understand that, by choosing the correct element, they could modify the element's description to agree with their account description. In another case, a large airline couldn't find a fuel cost element, which is a material cost for an airline, and had to add an extension element. Since 2009, the number of extension elements has dropped. The UGT has more than 18,000 elements that meet filers' needs, and filers have more experience with the tagging process.

Despite the progress made in reducing extension elements, XBRL US has identified other issues causing high error rates (all data below are quoted from Brands, 2013b): reporting a negative value for an account that was expected to have a positive value (29%); and assigning an account element that doesn't fit in the account's hierarchy, such as an invalid axis member value combination (29%). For example, a complex fair value disclosure

can only include the fair value elements that are related to the disclosure. Other common errors include using an incorrect calculation weight (5%), missing calculations (3%), values reported that should be zero or empty (3%), and values that seem unreasonably large or small (3%).

Being that a major goal of the 2009 mandate was to provide transparency in financial reporting, the presence of errors undermines that objective. Performing a comparison of a company's peer group using XBRL data will be compromised if the underlying data contains errors. The limited liability provision for XBRL filings expired on 30th June, 2013, so the filings are now subject to the same penalties as regular filings under the securities laws. The impending rollout of the SEC's Accounting Quality Model (AQM) at the end of 2013 means that tagging errors will trigger comment letters-letters from the SEC to filers asking for clarification about XBRL tagging and other disclosures. The power and sophistication of the AQM could mean the issuing of substantially more complex comment letters requiring considerable time and effort for a company to resolve. The AQM's analytical tools provide the SEC with the capability to identify more comment letter issues.

Another important exposure to companies in regard to XBRL is the point that tagging information is readily accessible by investors and analysts through SEC and company filing viewers. Therefore, a simple tool could be used to download a company's XBRL filings where anyone will be able to analyse a company's filings. Companies may perceive that no one is using XBRL data, but once the data becomes part of the SEC's XBRL database, regardless of its accuracy, a company cannot erase it. Companies that do not think that any of their staff is using XBRL data may get a rude

wake-up call. One worst-case scenario occurred recently when an analyst found an error and notified the company's general counsel and the SEC.

Approval for the quality of extensions has not been high at the early stage of XBRL adoption (Debreceny, 2011). Du, Vasarhelyi and Zhang (2013) documented 4,532 filings which contain 4,260 errors at the early stage of XBRL adoption. The number of errors per filing is significantly decreasing when a company files more frequently, suggesting that the company filers or the filing agents learn from their experiences and therefore future filings can be improved.

### 2.2.3 Assessing the quality of financial reports

Concerning the quality of financial reports, many academics and financial reporting authorities have their own definitions of good quality financial reports. US FASB Concepts Statement 2, Qualitative Characteristics of Accounting Information, defines quality as a hierarchy of accounting qualities, with relevance and reliability considered the primary ones. In addition, the statement has a set of criteria, such as representational faithfulness, verifiability, neutrality, predictive value, feedback, comparability, consistency, and timeliness.

The 1994 AICPA Special Committee on Financial Reporting (the Jenkins Committee) did not refer to the "quality of financial report" but rather the "quality of reported earnings." Its definition indicates that quality is related to both the ability to predict and the relevance of the information. In identifying quality, the Jenkins Committee used several concepts that emphasised users' needs, such as understanding the nature of a company's

businesses and performance, changes affecting the company, management's perspective, and others.

Surprisingly, when discussing the quality of financial reports, most people think that a new, better accounting standard will improve the quality of financial report. In this regard George Iatridis (2010) thinks that a change in accounting standards may be the phenomenon that reduces the quality of financial reporting, even if there are restatements. In other words, the ability to analyse trends over a long period is destroyed. In particular, consistency and comparability will not be effective criteria for success when the standard is adopted during any of several years, particularly in regard to allowing a choice of how to adopt, such as retroactive or prospective application. When a new standard is issued to replace an old one, the new standard should simplify adoption procedures and make it effective for all entities in a single year and under one method. New standards should improve comparability, consistency, and understandability, not only relevance and reliability.

The accounting profession must improve its reports to the public, and standards must clearly reflect the economics of the underlying transactions. These are all big issues to be considered as XBRL is changing not only the format of financial information, but also some concepts and methods concerning financial reporting.

To put it simply, this thesis adopts an indirect approach to assess the impact that XBRL will have upon the accountant's work. For the criteria of the quality of financial reports that accountants produced in traditional and XBRL format, the data quality assessment system suggested by Strong, Lee and Wang (1997) is to be used, placing the quality of data into four category groupings (Intrinsic, Accessibility, Contextual and

Representational) and different dimensions of each category (for details, please refer to Table 15). In addition, generally accepted criteria such as Understandability, Relevance, Reliability and Comparability will also be used to assess the quality of financial reports being produced in traditional format and XBRL format. Besides, Current, Usefulness (general), Amount of Information, and Over All Score is included as additional criteria.

## 2.3 The impact of XBRL on different types of users

Hodge et al. (2004) claimed that financial statement users can benefit by using standardised XBRL filings. Specifically, they show that nonprofessional users are more likely than professional users to benefit from the efficiencies of search-facilitating technologies, such as XBRL, for analysing financial statements and footnotes. In addition, since XBRL provides a standardised method to prepare and exchange business information (Bergeron,2003; XBRL International, 2011), XBRL is capable of reducing information asymmetry resulting from incompatible reporting formats. Yoon et al. (2011) indicate that XBRL adoption led to the reduction of information asymmetry in the Korean stock market, and that this effect is stronger for large-sized companies than for medium-sized and small-sized companies. This international finding argues for an accelerationn of the adoption of XBRL in other countries. However, an empirical examination in the U.S. capital market remains to be completed in order to determine whether, for example, XBRL filings will pay off in terms of improving an organization's information environment.

XBRL assists stakeholders, such as companies, investors, and regulators, in integrating information by providing a standardised format for preparing and exchanging data. Using the consolidated data gathered in XBRL, companies can produce uniform filings from various reports using varying

subsets of the data with minimum effort. For instance, when the U.S. Federal Deposit Insurance Corporation (FDIC) implemented XBRL for the quarterly collection of financial data (i.e., Call Reports) from approximately 8,200 U.S. banks at the end of 2005, the improved process allowed the FDIC to gather and analyse cleaner, more accurate data and publish more timely information for the banking industry (Federal Financial Institutions Examination Council, 2006).

Due to its machine-readable format, where each piece of business and financial data is tagged, XBRL will reduce stakeholders' time outlay and the cost of accessing information by minimising manual processes, particularly those involved in the assembly and re-entry of data. Stakeholders, therefore, can focus more of their time on analysing data, rather than collecting and manipulating data (Apostolou & Nanopoulos, 2009). In particular, XBRL-enhanced search engines can enable investors to simultaneously view similarly tagged financial information. This simultaneous presentation helps to improve analytical capabilities by revealing discrepancies and enabling comparison of deeper sets of information (Gray & Miller, 2009). Faster navigation of financial data across a market or industry also uncovers anomalies and eases preparation of updated reports (Premuroso & Bhattacharya, 2008). In addition, regulators are able to immediately identify problems with filings through XBRL software that automatically checks and verifies the data (XBRL International 2011b), resulting in improved accuracy and reliability of financial data.

### 2.3.1 Investors

Investors and analysts have to convert the financial information that companies report into customised formats suitable for further analysis. This process is not only highly labour-intensive but also "the least standardised and the least automated link in the entire value chain of capital markets" (Berkeley et al., 2003). The benefits of XBRL to both investors and analysts include near real-time access to business intelligence, therefore, allowing them to monitor the financial health of companies where they have a stake anytime and anywhere (Bergeron, 2003). Consequently, XBRL potentially brings democratisation to financial markets, because "timely, relevant, accurate, and complete information is available simultaneously to all for immediate use" (Watson, 2004).

An Evaluation of the Current State and Future of XBRL and Interactive Data for Investors and Analysts, by Harris and Morsfield (2013), was based on interviews with analysts and investors to explore whether or not "XBRL has delivered on its promise to them." Their major findings included analysts' and investors' dissatisfaction with high tagging-error rates in the filings, excessive use of tagging extensions, the need for more detailed tagged data, lack of audit assurance of tagged data, and the lack of tools to receive the data and then integrate it into companies' workflows.

The high tagging-error rate has plagued the accuracy of XBRL filings since the mandate went into effect. During the mandate's initial filing phases, the U.S. GAAP Taxonomy (UGT) was underdeveloped, and filers were inexperienced in the tagging process, which caused the high error rate and the use of unnecessary extensions. Subsequent versions of the UGT added tags that better met filers' needs and reduced the need to create extensions,

which improved the quality of the tagged financial statements. Being that the mandate classified XBRL filings as furnished instead of filed, penalties are still not being assessed for filing errors. While the SEC has yet to announce the end of the furnished status that gave filers limited liability for filing errors, furnished status is probably not permanent. The SEC's Division of Risk, Strategy, and Financial Innovation (RSFI) is developing an Accounting Quality Model (AQM) that allows the Commission to use analytical tools to monitor public companies' financial filings to address risk, to protect investors and to find errors. When the AQM is launched, filers will have plenty of incentive to improve filing accuracy to avoid filing penalties.

Another major factor affecting the accuracy of SEC XBRL filings is that there is no requirement to audit tagged data. If the Public Company Accounting Oversight Board (PCAOB) and the SEC want to ensure accurate data, an XBRL filing audit requirement must be enacted. Until that happens, companies should engage their auditors to review their filings for tagging accuracy. The Columbia study also found that users want more tagged data, including the Management Discussion and Analysis (MD&A) section of the filing and proxy statements, elements that are not tagged at present.

Another concern is the lack of tools to receive XBRL-tagged data and integrate it into companies' workflows. For the majority of filing companies, preparation of XBRL SEC filings is an add-on activity that cannot be generated directly from their enterprise resource planning (ERP) systems. As a result, companies cannot use filing information or its details for analysis because ERP systems do not record the information in XBRL at the transaction level unless they use XBRL GL (Global Ledger). If major

software vendors such as Oracle, SAP and others enabled XBRL at the transaction level, then companies could build XBRL data into their workflows and generate their SEC filings automatically.

Being that the SEC's XBRL mandate is often the only exposure that finance and accounting professionals have to XBRL, many business information users have not looked beyond the statutory requirements to see how it can help them meet other business information needs, both internally and externally. Instead of viewing XBRL as a tool to leverage electronic data for their organizations, they view it as a burden. Until they perceive XBRL as a tool that is easy to use, one that meets their business information reporting needs, XBRL will continue to face criticism.

### 2.3.1 Regulators

In a few countries, such as Australia, individual organisations are required by law to submit regular financial reports to regulatory government authorities, such as the Australian Taxation Office (ATO), the Australian Securities and Investment Commission (ASIC), and the Australian Stock Exchange (ASX). Upon collection, these authorities aggregate and repurpose financial and non-financial information from disparate systems in non-interchangeable formats which can be time-consuming, error prone and costly (Shin, 2004). In general, regulators can experience two major benefits from using XBRL. First, cost savings associated with their acquiring and absorbing information from businesses (Weber, 2003). Second, using XBRL facilitates the standardisation and harmonisation of international business reporting standards (Finkelde, 2004). Many commentators believe that regulatory agencies can play a critical enabling

role in XBRL diffusion if they choose to mandate XBRL reporting through legislative requirements (Troshani & Doolin, 2005).

### 2.3.1 Managers

Potentially, the largest group of XBRL users are individual organisations, who are expected to use XBRL to streamline their internal financial and operational reporting systems. Using XBRL, managers could produce basic financial information once and deliver it in a range of formats for internal management purposes as well as external reporting. The benefits of doing so are likely to include reduced information processing time and errors, potentially leading to more timely reporting and quicker decision making. However, individual organisations have been slow to adopt XBRL, and their ability to do so may hinge on the availability of XBRL-enabled enterprise and accounting software (Doolin & Troshani, 2004).

### 2.3.1 Accountants and other users

XBRL creates a computing infrastructure that enables accountants and auditors to conduct consultancy and value-added services for their clients, in addition to basic reporting. This positions them as business advisors. Further, XBRL helps these parties to interact more efficiently with other entities on behalf of their clients, while increasing accountability and transparency (Pinsker, 2003). Since XBRL eliminates the manual transfer of information, there will be fewer errors of omission and commission, resulting in higher quality services and reports. In addition, the computing infrastructure created by XBRL will considerably facilitate custom reporting, which is otherwise time-consuming and resource intensive (Bergeron, 2003). These benefits translate into increased revenue for accountants and auditors and improved value for their clients. Many

informants have maintained that large accounting and auditing firms who are successful in adopting XBRL can act as role models to inspire their smaller counterparts in their adoption efforts. This was seen to have the potential to generate 'bandwagon' effects to accelerate XBRL diffusion.

As indicated earlier, XBRL taxonomies are based on accounting standards. Because accounting bodies are considered to be the 'standard-setters' it is logical for them to be at least partially responsible for the development of an Australian XBRL taxonomy, including updates, maintenance and versioning. Failure to resolve post-adoption maintenance concerns might have an adverse impact on the diffusion of XBRL in Australia. In addition, accounting bodies can contribute to XBRL diffusion by imposing XBRL adoption as a legitimate practice on their network memberships (McAdam, 2005).

XBRL is very complex, and producing instance documents manually is practically impossible. Consequently, the benefits of XBRL cannot be delivered without automated software tools. These are developed by software developers and distributed by vendors. Software support is crucial if the XBRL technology is to succeed (Liu and O'Farrell, 2013). In this context, software vendors can deliver practical solutions supporting the implementation of XBRL initiatives, such as financial analysis and external reporting. These solutions are likely to drive XBRL adoption as potential adopters will be able to see the benefits that XBRL can deliver, while creating economies of scale for both developers and vendors alike.

To conclude the review, there is evidence to show that the previous research related to XBRL has mainly focused on the introduction, taxonomy, adoption and post-adoption of XBRL. Clearly, a systematic

research on the adoption effect regarding the quality of XBRL formatted financial reports and methodology to evaluate the quality of XBRL formatted financial reports is needed. In this study, an evaluation model based on the quality criteria will be formulated and applied with a sample of XBRL formatted and non-XBRL formatted financial reports from the US, South Korean and China. We will so attempts to offer one of the first XBRL research studies that move from the pre-XBRL adoption period to the adopting period. The following research methodology chapter will introduce the design of a quality evaluation model and the evaluation process of using the model to evaluate XBRL formatted and non-XBRL formatted financial reports.

# CHAPTER 3

# RESEARCH METHODOLOGY

## 3.1 Introduction

Previous research related to the quality of XBRL formatted financial reports mostly used questionnaire and interviews (Troshani and Rao, 2007), and XBRL voluntary pioneer programme, indirect website observation (Debreceny & Gray, 2001) and statistics (Bonsóna, Cortijo, & Escobar, 2007a). However, these studies do not give a standard model to evaluate the total quality of formatted financial report, especially one designed for XBRL formatted reports. Moreover, no one has specifically focused upon the impact of XBRL to the accounting profession.

The design of research methods for this thesis consists of three related sections: the design and application of quality index marking system, and the questionnaire and interviews with professional accountants. The application of quality index marking system to evaluate current XBRL and non-XBRL formatted financial reports is divided into two associated stages: the pilot study and the dissertation study stage.

Two major divisions of questions are plotted out from the key question. The impact of XBRL on Financial Reporting and the Accounting Profession can be more clearly specified as its impact on the efficiency of the accountant's working process and its impact on the quality of Financial Reports that are produced with and without XBRL. Figure 19 shows the overall approach to the research questions.

**Figure 19  Research Design**
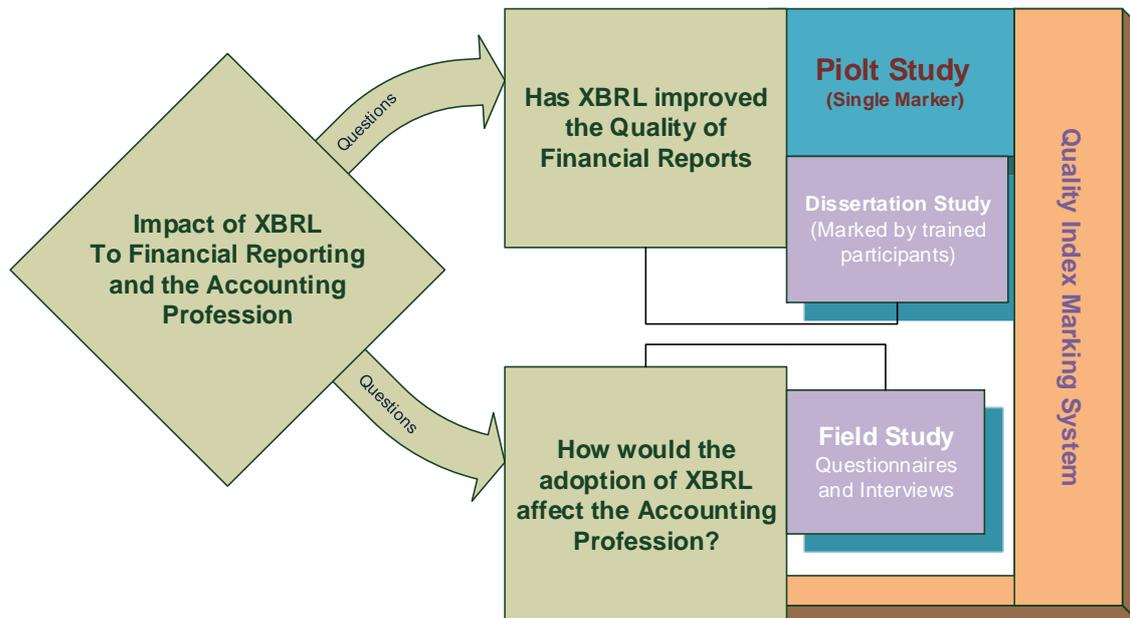


Initially, a deductive method will be used to assess the efficiency of the accountant's work with and without XBRL. It will deduce the detailed work procedure of an accountant performed before XBRL was introduced, then comparing it with the use of XBRL. The other division of the questions concerned involves a comparison with the quality of the accountant's work or simply the quality of financial reports being produced in XBRL and non-XBRL format. For the purposes of this part of the study, we will first create an Index System (criteria to assess the quality of financial reports), and this Index System will then be used to mark a general selection of financial report samples and compare their marking results.

Finally, to make sure the results of the first stage research are moving us in the right direction, they will be confirmed with feedback from the practitioners. Real accountants and XBRL early adopters will be interviewed and a set of questionnaires will be sent to professional accountant's networks through the internet. A website has been set up to

assist in the collection of the questionnaires and experiments of XBRL web applications.

The work procedure of accountants has evolved in the past century, from solely paper based operation to a mostly computer assisted approach. Earlier changes already shortened the procedures of the accountant's work as it reduces paper-based work. Will XBRL be another evolution for the accountant? Will it reduce the work time to accomplish the same tasks than before? This paper focuses on comparing the time that the accountant will spend on performing the same task in the same computer assisted environment, both with and without XBRL. The typical task covered will be that of producing an annual financial report. The question regarding the efficiency of accountants can be assessed by demonstrating and comparing what an accountant would need to do with and without XBRL. However, similar to previous questions, this part of the study focuses on the complexity and natures of the different tasks required, instead of just on the same task.

At the same time, another matter to consider is whether the nature and amount of accountant's work might also be changed. XBRL is designed to enable computers to access financial data faster and more rationally, supposedly making easier most of what was previously time-consuming accountancy work, and so allowing accountants to perform more complex, analytical and demanding tasks.

Two interviews upon the working content of accountants with and without XBRL were conducted with SuNing Appliance (listed on Shenzhen Stock Exchange in July, 2004) and Golden Concord Holdings Limited (an international corporation in green energy industry). Both corporations have

a large 'Financial Information Centre' with over two hundred accountants to deal with accounting matters for over a hundred subsidiaries. While the SuNing model using SAP has completely changed the working content of accountants after using XBRL, the GCL group model using UFIDA still principally serves to group their accountants with traditional accounting process. SuNing has transferred the function of their accountants to mainly focus on data mining relevant to financial information in order to "recreate value".

Previous XBRL related research questionnaires did not specifically target the quality of financial reports. Therefore, the principal task here will be to abstract useful questionnaire results from these loans of questionnaire data and find out those that connect with the application of XBRL to accountants work. The information needed to draw out conclusions from these data mostly concerns what accountants' work practically involves, and to see if those applications that XBRL is designed to do may ease or diminish that particular part of an accountant's work.

A framework of analysis model was then drawn out with the most approved contents of the accountant's work being compared with procedures under XBRL and non-XBRL environment, and marked according to time requirement and complexity in a score of 0 to 10.

## 3.2 Pilot Study

Daske and Gebhardt (2006) have used a similar research scoring method. They marked financial reports in IFRS and local accounting standard to compare the quality of financial report after IFRS was adopted. The biggest difference is that they only have an overall score, but parallel this score

with a year on year and industry by industry comparison. They principally utilised 'quality scores' extracted from the yearly 'Best Annual Report' beauty contests which have been held for several years in various countries. Their quality scores are available as a time-series of up to eight fiscal years. In the U.S., the ratings of the Financial Analysts Federation (FAF) Corporate Information Committee have been used to judge the disclosure quality of financial statements (Lang & Lundholm, 1996). Internationally, Hope (2003) has applied similar scores from the Centre for International Financial Analysis Research (CIFAR). Typically, these scores are only available for larger firms, already well covered by financial analysts. Moreover, conceptually, the validity of these scores has been questioned due to concerns about the independence of financial analysts and their incentives which might influence the assignment of their scores and relative ratings.

However, in this study, the task will be to vertically compare samples which were produced in the same year with the *same* financial reporting standards, including detailed criteria of the quality of financial report. One reason is that the specific research topic is more concerned with depth rather than width. The other reason for not comparing XBRL and Non-XBRL financial reports of difference years is that XBRL is still in its development and adoption stage, which result in limited data availability. There are no quality scores available which are designed for XBRL and Non-XBRL financial reports yet. Therefore, this study has to create a score index system and mark its own score here.

The XBRL sample used will be sized between 100 to 200 files, in annual financial reports; mainly US, Korean, and Chinese filings, in IFRS. The non-XBRL format will be IFRS randomly selected with a similar format to

XBRL samples in terms of company size, country of origin, accounting standard (IFRS). They must also be annual reports. The overall sample size of XBRL formatted financial report files is chosen in relation to availability and IFRS standards. The XBRL formatted financial reports are available on four major data websites: US Edgar Online, Korean Kosdaq, Chinese Shanghai Stock Exchange and Japanese Tokyo Stock Exchange websites. There are about 180 samples in total, dated year 2008.

### 3.2.1 Model design: Quality Index Marking System

A Financial Report Quality Assessment model is needed to mark and analyse the samples for the research. There has not yet been a specific one designed for XBRL FR. Therefore, a new model based on quality criteria and statistic markings will be introduced in this section of the study.

Different groups define financial report quality in different ways. In the US, the financial analyst federation evaluates the Timeliness, Detail and Clarity of Information presented of about four to five hundred of financial statements each year. FASB concepts statement 2, qualitative characteristics of accounting information, defined quality as a hierarchy of accounting qualities with Relevance and Reliability as the primary ones, and Representational Faithfulness, Verifiability, Neutrality, Predictive Value, Feedback, Comparability, Consistency and Timeliness are also included as additional criteria. Comparably, the 1994 AICPA special committee on financial reporting did not refer to the "quality of financial reporting" but rather the "quality of reported earnings", which is more closely connected to both the relevance of the information and the ability to predict. Other academics insist that quality lies in the transparency of financial reporting when representing the underlying business, or they

place the emphasis on consistency and comparability which enables trends to be analysed over a long period.

Strong, Lee and Wang (1997) have suggested a framework of categories and dimensions for data quality, one which is better structured. It does not just apply to financial report data, for it can also generally apply to all other types of data. The data quality assessment framework highlights extended aspects of data quality. They define high-quality data as data that is fit for use by data consumers. Therefore, usefulness and usability are considered to be the most important aspects of data quality. Using this definition, they divide the characteristics of high quality data into four categories, as shown in Table 15.

**Table 15  Data Quality index**

| Data Quality Category | **Intrinsic** | **Accessibility** | **Contextual** | **Representational** |
|---|---|---|---|---|
| Data Quality Dimensions | Accuracy Objectivity Believability Reputation | Accessibility Access Security | Relevancy Value-Added Timeliness Completeness Amount of Data | Interpretability Ease of understanding Concise representation Consistent representation |

(Source: Data Quality in Context, Strong, Lee and Wang, 1997)

Strader (2007) has used this framework to assess XBRL taxonomy components. The results are shown in Table 16. The author concludes here that the impact of XBRL on intrinsic data quality is limited because the verification system in XBRL is only based on mathematical calculations. In terms of accessibility of data, quality is only limited to the ease of access and not security. In terms of the contextual and representational of quality, they are very positive. In addition, Strader believes that XBRL data provides more flexibility being that XBRL definition linkbase and

taxonomy extension components are very extensible, which can be changed by users and regulators on requirement.

Strong's framework will be used as the main basis for the assessment system of financial report data. Each XBRL and Non-XBRL sample reports will be marked under each data quality category with each having data quality dimensions. These scores will then be summarised using standard statistical methods in SPSS.

**Table 16  XBRL Components and Data Quality Categories**

| XBRL Taxonomy | Intrinsic | Accessibility | Contextual | Representational | Extensibility |
|---|---|---|---|---|---|
| Schema | | | X | | |
| Presentation Linkbase | | | X | | |
| Calculation Linkbase | X | | | | |
| Definition Linkbase | | | | | X |
| Label Linkbase | | | | X | |
| Reference Linkbase | | | | X | |
| Taxonomy Extension | | | | | X |
| Instance Document | | X | | | |
| XBRL Limitation | X | X | | | |

(Source: XBRL Capabilities and Limitations, Troy J. Strader, Dec 2007)

In spite of the flattened structure of the data quality assessment system illustrated above, need to pay more attention to other criteria in the analysis because of different concerns of different user groups. Therefore, these selected criteria are put into two groups. One is that of generally accepted criteria being used in accounting authority publications, such as Accounting Standards, and instructions in official financial report submissions. The other one is un-officially stated criteria, which are not as generally used the same as the first criteria group, due to the different arguments of individual academics or the financial information users group.

The first group of criteria that are emphasised in the analysis are Comparability, Understandability, Relevance and Reliability. The second group of criteria are Current, Accuracy, Accessibility, Usefulness (general) and Amount of Information. Overall Score will be marked first because the criteria above are not all components of the quality of financial reports. Even if they are taken to be the weight of how much import they have, the overall quality score will be different without considering the importance to different type of financial information user groups and overlapping parts. The differences will be deducted and placed in an extra coefficient named 'Others' to complete those criteria that have not been covered. Both groups will be using a 0~10 score marking range.

### 3.2.2 Data Collection

The data collection of deductive method part is similar to that of the literature review. The data collection for the indirect XBRL-related previous research questionnaire part aims to determine which previous research data and abstracted information are useful and directly related to the topic. In this study, most of the data used is based on the UK Business Adviser Barometer Survey Database dating from September 2002 to July 2009 (72 Questionnaires in total), the official SEC XBRL survey (in-house tagging), Merrill's XBRL Survey (out-sourcing), and the CFA Institute's 2007 XBRL Awareness Survey Data.

There are also a few other related sets of research data; for example, website statistics on financial reports conducted by Peter Oyelere, Fawzi Laswad and Richard Fisher (2003), a survey of similar XBRL related questionnaires conducted by Robert Pinsker (2003), and a survey completed by select participants in the SEC's XBRL Voluntary Filing

Program, including numerous Fortune 100 companies with complex financial reporting requirements (Choi, Grant & Luzi, 2008).

### 3.2.3 Sample Marking

The first issue of marking is how to rank the different quality aspects of each financial report and how to present them. Generally, the marker spent a similar length of time reading each financial report from the beginning to the end, generally 10 minutes each. Notes were taken down when reading the financial reports; for example, when there was an error, a double piece of information, or an interesting aspect of the financial reports. All notes contributed to the final marking scores of the financial reports. The marker took general impressions and noted specific issues for each quality aspect of the financial reports during the final marking process. Each evaluation result of single financial reports was to be listed in one table, either digital or on paper. The presentation of the marking results is shown in Table 17.

**Table 17  Quality analysis marking model**

| Modulus | Score | Sub-Score |
|---|---|---|
| Q0 (Over-all) | | |
| Q1(Major Scores) | Q1A (Intrinsic) | Q1A1 (Accuracy) |
| | | Q1A2 (Objectivity) |
| | | Q1A3 (Believability) |
| | | Q1A4 (Reputation) |
| | Q1B (Accessibility) | Q2B1 (Accessibility) |
| | | Q2B2 (Access Security) |
| | Q1C (Contextual) | Q3C1 (Relevancy) |
| | | Q3C2 (Value-Added) |
| | | Q3C3 (Timeliness) |
| | | Q3C4 (Completeness) |
| | | Q3C5 (Amount of Data) |
| | Q1D (Representational) | Q4D1 (Interpretability) |
| | | Q4D2 (Ease of understanding) |
| | | Q4D3 (Concise representation) |
| | | Q4D4 (Consistent representation) |
| Q2(Gap:Q0-Q1) | Others | |
| Q3(errors) | | |

Samples were collected from different economic regions, at different times in different formats. There are two typical regions of XBRL adoption: the US represents the Western countries, including Europe, and China represents the Eastern countries. Both regions have evolved their XBRL from early test periods to the current application stage. South Korea was one of the earliest successful XBRL adopter countries, receiving a great increase in their foreign investment after using XBRL in the KOSDAQ stock exchange system (Wu, Li & Selover, 2012; Jeong, Na & You, 2014). Therefore, the targeted sample pools are: US XBRL FR in the voluntary filing period, US XBRL FR in the mandatory period, Chinese XBRL FR in the draft period, Chinese XBRL FR in the mandatory period and Korean XBRL FR. Non-XBRL formatted financial reports from the same region and same period were also collected, marked and then compared with XBRL formatted samples.

In the analysis, quality scores of XBRL FR were compared with non-XBRL FR to see which quality criteria XBRL has influenced current financial reports. In addition, the quality of XBRL formatted financial reports from different regions at different time were compared to each other, in order to discern the differences of FR quality between different adoption stage and between different economic regions.

As a suggestion for future research, the logistic regression analysis and multiple regression analysis can be adopted to answer the following question. Is there an association between the overall quality mark (the dependent variable in the multiple regression analysis) and individual criteria (the remaining dependent variables which are characteristics and proxies for the degree of variation related to the quality of financial reports) when using and not using XBRL format? This study focuses upon the

change in the quality of financial report after using XBRL rather than the relationship between criteria.

Finally, a parallel comparison of aggregated and individual mark values between XBRL and Non-XBRL financial reports will be performed. It will examine how XBRL will impact upon the quality of financial reports produced by the accountant in criteria details, as well as the general conclusion taken from the overall score. There is no guarantee that the financial reports now being produced in XBRL will be better than previous traditional financial reports in recent years, especially when XBRL and related software are still in a development stage.

## 3.3 Dissertation Study

Later on, when more resources are available, this research has designed to be used to train participants to conduct experimental research. The targeted participants are final year accounting major students. Although the student participants may have different views and behaviour to the actual investors, it still presents an objective evaluation for the quality of XBRL and non-XBRL formatted financial reports using the quality index marking system developed in this thesis.

### 3.3.1 Participants

The participants used in this section of study are voluntary final year accounting major students in international accounting class. They have been attracted by the fame of XBRL, and wish to know more about XBRL, and what XBRL formatted financial reports looks like. All the participants (over 700 students) have good accounting knowledge and sufficient English language. They were pre-trained for three hours on the definition

of XBRL, how XBRL work, where to find XBRL formatted financial reports, and most importantly, how to evaluate the quality of a financial report using the quality index marking system. They have a similar level of accounting subject knowledge and understanding of the method on the marking, therefore we would expect this approach to provide comparable data.

### 3.3.2 Design and Materials

First of all, the participants need to be trained with both the knowledge of accounting and an understanding of XBRL. This accounting knowledge, including basic accounting terms, preparing and reading a financial report, was already sufficiently acquired in other classes; therefore the participants only need to be briefed about XBRL. The book, *Financial Reporting Using XBRL* by Charles Hoffman, has been given to each student in the study material website, along with the homework system. Participants can read more about XBRL after the briefing class, or go to the web to check the latest news about XBRL.

Secondly, participants have to be introduced to the quality index marking system, and then shown how to use it to mark a few different types of financial reports. This training was giving on training classes, making sure that marking is objective, using the same standard. At the same time, a lot of tips were given, such as how to make notes on specific points found when reading the financial reports evaluation.

Finally, a selected viewpoint need to be defined before the marking. The quality of some financial reports may appear different to different stakeholders. For example, certain information is useful to regulators might not be useful to the investors. Therefore, for this research project, each

participant is asked to view themselves as a general investor who would buy or sell a company's stock, and thus have to need to know more about the cooperation. Large investors and investment institutes have not been considered.

### 3.3.3 Analysis and Models

The scoring model and analysis method were the same as in the pilot study using a single marker. Participants were given a marking table for each financial reports they evaluate, with a total score, and detailed: Q1A1 (Accuracy), Q1A2 (Objectivity), Q1A3 (Believability), Q1A4 (Reputation), Q2B1 (Accessibility), Q2B2 (Access Security), Q3C1 (Relevancy), Q3C2 (Value-Added), Q3C3 (Timeliness), Q3C4 (Completeness), Q3C5 (Amount of Data), Q4D1 (Interpretability), Q4D2 (Ease of understanding), Q4D3 (Concise representation), Q4D4 (Consistent representation). Each single criteria was explained carefully in the training. Scores were then regrouped after collection.

### 3.3.4 Procedure

The actual marking procedure was conducted through the online homework website system. The samples of financial reports were pre-collected from America, Korean and China. Each student was given one XBRL and non-XBRL formatted financial report from each region. The homework system distributed different report files to each participant; therefore, no participant was marking the same report. The system would start timing right after the participant opened one report file, and stopped after ten minutes. The participant was then asked for the detailed scores for each financial report. The participant could stop the timing and submit the score before the time was up. The results were then sent to the system's

MySQL database, which would provide intensive output for analysis as Microsoft excel files.

### 3.3.5 Measures

The collected scoring data then needed to be validated. For example, not every participant understood the method of quality index marking or treated the marking process seriously. These discrepancies can be revealed on the tags along with the marking data; for example, the actual time the participant spent on each financial report. If it was less than one minute, then the score on that financial report would not be reliable. Moreover, if too many participant's scores were identical, then there was another reliability issue. For the measurement of the quality score itself, the same marking model was followed using scores from 1 to 10.

## 3.4 Field Study

After the first two different approaches of the theoretical investigations given above, the questionnaire and interview methods were also adopted to acquire evidence and gauge the perceptions of the practitioners and XBRL users. Most research projects normally tend either to be more quantitative or qualitative in the research methods employed. Here, however, the study used a multi-method approach to achieve the same objective, so that the findings were more robust.

Questionnaires with additional interviews were conducted with professional accountants and XBRL users to diagnosis the impact of XBRL upon their work from real experience. If the findings echoed the findings of the first two approaches, then it can be concluded that the research questions in this study have been successfully answered.

### 3.4.1 Questionnaire

The main research objectives involve professional accountants who already have a certain level of XBRL experience. At the same time, it was useful to see the portion of current XBRL coverage and views of those who are going to use XBRL and have not yet experienced its use. Therefore, a general coverage of all different types of accountants was necessary.

Yet, in noticing that the need of different types of accountants, it can be said that the impact of XBRL will be on very different levels. There are corporate accountants who work with firms to prepare financial reports, and manage corporate finance at the corporate and multi-national level. There are also tax accountants and firms who help consumers and small businesses prepare their yearly tax returns. There are independent book-keepers, accountants, billing managers, and other related professions, all of whom will be using XBRL differently. We would include public accountants, who provide accounting, auditing, tax, and consulting services; government accountants, who track government income and spending, and may review business and citizen accounts (e.g. tax returns); and internal auditors, who essentially "double check" to ensure all accounting is correct and procedures are followed. A lot of those booking keeping accountants, for example, might lose their jobs after XBRL applications has atomised most transactions. Accordingly, the questionnaire needs to be designed differently depending on the types of accountant groups and levels of XBRL experience.

The top three regions that appear on the top of this list are the United Kingdom, the United States, and the People's Republic of China. Later on, after the first series survey distribution, Australian and Canadian

accountants are included in the respondent pool because they had also mandated XBRL by that time, and could therefore be considered as similar to the US respondents.

The structure of the questionnaires is based on the level of XBRL experience with regard to information objectives. Accountants who have not used XBRL before should be quickly directed into the section of prospective questions with extra information provided on what XBRL is. Accountants who already had general knowledge of XBRL and used XBRL associated software to prepare a financial report before went straight into answering the key objective questions of this research. The questionnaire is provided in Appendix A.

Email proved to be one of the most convenient means of contacting people and communicating information. There are professional marketing services which provide a good quality list of most US charted public accountants with their contact details. It was also possible to contact the accounting association and XBRL US (international) for help. Some researchers and research institutions (e.g. Merrill Corporation) have conducted different research studies with similar target accountants.

However, there were no similar commercial mailing list services available for the UK. The chartered accountant associations and XBRL UK were thus consulted directly to obtain contacts. Despite the fact that very few people have yet used XBRL, in view of the slow adoption process in the UK and the  fact that many accountants do not know much about XBRL (although some may have heard of it), some tax filing accountants might just be preparing for next year's mandatory tax filing. The directory website (XBRL.CN) was obtained as the sources of contacts. The type of

accountants that could be contacted in the UK were mainly Tax Accountants and Auditors who are responsible for tax filings. In China, the direct mailing list is not easy to obtain. The only way to obtain contacts was through the addresses where firms had submitted their XBRL formatted financial reports.

The final correspondent pool used was generated from the XBRL formatted financial reports that was used in last chapter. A PHP programme was built and the contact section of these XBRL formatted financial reports was abstract, giving output as an Excel table. In this way, most correspondents were XBRL experienced professional accountants, which is the main type of subject of the research. Therefore, these original correspondents were mainly from the US, China and Korean. There were 1000 valid contacts in total, checked by 'bulkmailer' group email software (please refer to Figure 20).

There was an issue of whether it was necessary to create a website or use an existing questionnaire website system to build the questionnaires in the format of web pages. This could be done by creating an absolutely new database based questionnaire system on the existing research website, XBRL.CN, which would be harder but give researchers full control of a powerful system. Alternatively, free questionnaire services websites could be used, for example SurveyMonkey.Com. However, the free SurveyMonkey.Com questionnaire service can accept a maximum 100 respondents, which is far lower than the expected respondent pool. Therefore, XBRL.CN was built and used as one of the main method to obtain questionnaire responses online.

An email was sent to the target accountants with a website address that led them to the page of this study's questionnaire directly. In addition, the respondents could either fill in the Microsoft Word formatted questionnaire and email it back as an attachment, or complete the PDF formatted questionnaire and email it automatically by clicking the send button in the end of the PDF document. Comparably, online questionnaire can quickly filter the questions that need to be answered according to the type of respondents, therefore being more convenient and faster for respondents to reply.

Regarding the questionnaire, many questions contained both fixed answers and open answers as an option. Percentage marks were introduced in specific questions to add valuable information to those fresh topics. There were two types of open questions in the questionnaire. The first one was integrated with short options to categorise and simplify answers (appendix C1). The other type is an attached blank form with about 320 letters' space to investigate further information based upon respondent's XBRL experience when they had time (Appendix C1).

In regard to respondents who knew about XBRL but in non-accountancy related professions, the questions would be focused on estimation rather than actual experience. They answered the same questions as XBRL-experienced accountants, but their replies would not be taken be taken into account significantly in the main results. Regarding respondents who did not know about XBRL before, a brief introduction was given, as well as further study resources, in the last page of the questionnaire. There was only one question for them in the main questionnaire (one from 18 to 20), which was about how they would like to learn about XBRL. In a web integrated format of the questionnaire, the process is very simple. The web

page directed different groups of respondent automatically to specific sets of questions according to the answers of earlier questions.

The main group of respondents who were investigated in this survey involved experienced XBRL users. In paper and PDF format they were asked to fill in an evaluation form, whose aim was to mark different parts of their work in terms of time and complexity. Their opinions on the quality of financial reports in XBRL and non-XBRL formats were also evaluated through marks in an evaluation form. In the web version of the questionnaire, they were simplified as general question or individual questions (Table 18).

**Table 18  Web version programming draft**

| |
|---|
| *People who already use XBRL* |
| |
| *Do you think XBRL have Positive/Negative Impact to your work?* |
| *Strongly Negative, Moderately Negative, Neither, M-Positive, S-Positive* |
| |
| *Does using XBRL speeding up you preparing financial report?* |
| *Disagree --------------------------------Agree* |
| |
| *Does using XBRL help your produce a higher quality of reports?* |
| *Disagree --------------------------------Agree* |
| |
| *Does using XBRL make your work easier?* |
| *Disagree --------------------------------Agree* |
| |
| *Do you think XBRL will affect employment of accountants?* |
| *Disagree --------------------------------Agree* |
| |
| *Does XBRL change the nature and content of your work?* |
| *Disagree --------------------------------Agree* |
| |
| *In all, Do you like XBRL?* |
| *Disagree --------------------------------Agree* |

### 3.4.2 Questionnaire distribution and data collection

The distribution of these questionnaires was mainly performed using an email system. All the contacts were added into the address book of the

MaxBulk Mailer group mail software (Figure 20). The software would check which email addresses were not valid, then send emails to each contact one-by-one, with a link to the questionnaire webpage and attached with a PDF file of the same questionnaire if they preferred.

The feedbacks from the website were automatically collected by the website server by iMagic Survey software. The software filled in the responses of each question into the questions designed on the web (Figure 21). PDF formatted questionnaire replies and hand filled ones were manually put into iMagic software, so that all responds were gathered into one place. iMagic software can then produce graphically a statistical analysis of questionnaire result (Figure 22).



**Figure 20 Bulk Mailer**

**Figure 21 iMagic survey software screencut**
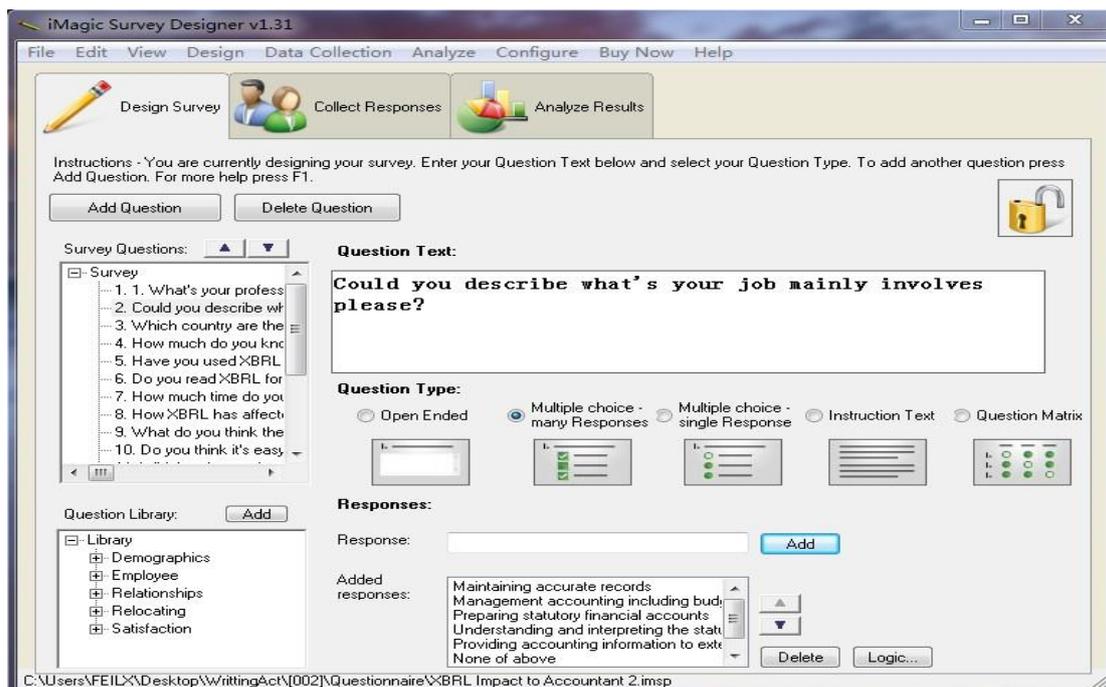
**Figure 22  iMagic sample graphic analysis tool**



### 3.4.3 Interviews

Due to the limitations of the email questionnaire method, telephone and face-to-face interviews have been conducted to obtain deeper and more reliable information of the actual impact of XBRL on financial reporting and the work of accountants.

### Telephone Interview (US, UK)

Those questionnaire respondents with XBRL experiences were be asked whether or not they would like to offer further assistance by accepting a phone call.

20 telephone interviews in the US and 38 telephone interviews in the UK were conducted with those who appeared to be supportive and answered 'yes' in the questionnaire responses. The topic of the phone call mainly focuses on when they started to use XBRL. How do they feel so far having used it (benefits, problems, what could have being done to make the

adoption easier and to support their work better, etc.)? What do they think is the likely impact of XBRL on their work and financial reporting in the future?

For both cost and convenience, the telephone interviews were taken on computer phone call software (Skype), with sound recording software operating at the same time. These records, accompanied with the background of the respondent and their first questionnaire contact data, were then put together.

### *Face to Face Meeting Interview (UK, China)*

Due to the characters of the sample field, and the areas to which the researcher can easily get access, a few contacts from the UK and China were interviewed. The focus of the interview questions was similar to the telephone interview, which covered interviewees' XBRL experience and future XBRL visions.

In addition to face-to-face discussion, interviewees were asked to demonstrate where, when and how they used XBRL in their work. Typically, they would be asked if they could show what XBRL software they used or outsourced to XBRL service companies, how they (or with out-sourcing staff) created an XBRL financial reports, which system or channel they used to upload the filing, and they used these report files subsequently.

These interviews would largely enhance this research findings and provide a lot of useful and relevant information that questionnaire and telephone interview cannot obtain. Some of the interviewees were able to directly

point out and show the main impacts that XBRL is having on their work and in financial reporting in general. As for the efficiency of their work being impacted by XBRL, there were much clearer and more detailed answers.

However, the number of samples were considerably less than questionnaire and telephone interview. The time and financial spending required to conduct face-to-face interviews were considerably more. We had the choice of arranging around three to ten face-to-face interviews, or simply taking the interviews as a case study.

In total, 20 telephone interviews were conducted in the US from March to July 2010, 3 face-to-face interviews in China in August 2010, 38 telephone interviews in the UK from Dec 2010 to April 2011, 12 face-to-face interviews in the UK from Jan 2011 to April 2011. Recordings and hand drafted answers were redrafted and analysis with data is given on page 175 of the 'Others' section of the questionnaire.)

Different approaches were applied to improve the accuracy of this research. The results of different methods were then compared with each other and the differences were analysed. For this topic, interviews were a good way to approach individual accountants and learn more about how XBRL had affected their work practice. Due to limitations of time, geographical location and the length of this PhD thesis, nearly 50 interviews were conducted, including both face-to-face meetings and telephone interview.

The original correspondent pool for telephone interviews was generated from the contact information in XBRL financial reports from the US. Those questionnaire feedbacks with confirmed willingness to take a further

telephone interview were contacted through Skype telephone. Face-to-face meetings were also arranged with researchers in China who were involved with the XBRL adoption and research for the Shanghai Stock Exchange system. Later, upon submission of this thesis, we learnt that UK HMRC has mandated the filing of all tax returns in XBRL format from 1st April 2011. Thus, we managed to conduct additional 20 interviews in the UK.

The set of questions for the telephone interview were simplified as with the paper format questionnaire. Respondents would then be asked questions in an order similar to the questionnaire. Answers were then recorded in the paper questionnaire. Different from the questionnaire distribution, telephone interviews quickly diverted respondents to an appropriate set of questions for different groups of people. More open information could also be obtained through conversation. However, it requires a lot of personal skills on the part of questioners and not all contact approaches prove to be pleasant. Face-to-face interviews were conducted in the questionnaire format similar to telephone interviews. The biggest advantage of face-to-face interview is that interviewers can see them demonstrating how they were actually using XBRL, how software applications were utilised, and how XBRL was introduced in their own cases. The key question topics in interviews are listed in Table 19.

**Table 19 Typical interview questions**

1. How did you know about XBRL?
2. How did your company adopt XBRL in the work process?
3. Which software or outsourcing service did you use?
4. How did that affect your work?
5. How would you rank the efficiency of work with and without XBRL? (as in marking table, between 0 to 10)
6. How would you rank the quality of XBRL and non-XBRL formatted financial reports produced? (as in marking table)

> 7. What would you suggest to improve the usage of XBRL in practice?
> 8. What would you expect XBRL would change in the future?

## 3.5 Ethical issues related

All participants used in the research were voluntary. No fees were charged for the training, and no salaries were given for the marking. It was conducted as an in-campus experiment. The training rooms were standard computer labs with internet available and homework system installed. The researchers also tried to ensure that participants were an equal number of male and female students, from different social classes and regions.

The questionnaires were distributed via the email system. Although participants did not have the choice of receiving or not receiving the questionnaire request email, they could treat it as a general junk mail and delete it if they had no interest. Therefore, all the questionnaires responses were treated as voluntary. Moreover, care was taken to send these emails to the proper number of male and female participants (although there are more female accountants in industry) with different backgrounds.

The combined research methods have given this research a solid background to assess current issues that XBRL is raising for financial reporting and the accounting profession. The assessment models provide a standard method for assessing the efficiency of accountants' work and the quality of financial reports, while the survey shows the opinions of current XBRL practitioners from a different perspective. As for the interview participants, they were linked contacts who were already very friendly and very happy to take the interview to discuss their experiences of preparing

and using of XBRL formatted financial reports in different contexts, using different software.

The following two chapters will introduce two models that were built to assess the efficiency of accountants' work and the quality of financial reports in detail. The efficiency model uses selected questionnaire results from UKBAB (2003-2005) as the factors for the contents of an accountant's work, and marks the efficiency of these contents with time requirement and complexity. A possible mathematical model will then be proposed for analysing the relationship between these factors. The quality model will use Strong's existing financial data quality index for the criteria, and mark 1000 different types of financial reports of different format (XBRL or non-XBRL) from different regions (US, CN and KR) and at different times (early XBRL adoption period and mandatory period).

The next chapter will compare the XBRL and non-XBRL markings in efficiency and quality emerging from the survey. The impact that XBRL will have on the efficiency of the accountant's work through our theoretical analysis might prove different from the survey results because of the different technology adoption stages in which the survey was conducted.

# CHAPTER 4

# THE QUALITY OF XBRL FINANCIAL REPORTS

This chapter includes results from both the pilot study results and the thesis study results. The pilot study results were obtained by a single marking, because at the beginning it was the only way to obtain marking results under the same, equal standard. Later on, an additional thesis study was conducted with external participants. Each participant was trained in accounting, XBRL, and the quality index marking system in order to be able to mark freely by themselves so that the marking result is more objective. However, this research revealed that markings performed by a single evaluator and multiple evaluators produce symmetrical results regarding XBRL and non-XBRL formatted financial reports from different regions.

## 4.1 Pilot Study Results

In terms of data type, it is clear that there are numerous scenarios in which XBRL is being and will be used and that quality issues depend to a considerable extent on the context in which the report is provided. While some of these scenarios are likely to affect the groups of sample quality features, these standards should be categorised before they are marked rather than afterwards.

1. Traditional financial reporting converted to XBRL format

The first common occurrence is where traditional financial statements are converted to an XBRL instance document which is provided to outside parties or included on a website.

In this scenario, the traditional financial statements are available in the usual way. The purpose of the instance document is most likely to be to facilitate the importation of the data into a user spread sheet or analysis tool. In this case, the user is most likely to require that the quality that the data represented in the instance document is at the same level as the data in the audited financial statements. The user may also be concerned that the appropriate taxonomies are used and that the data is tagged and mapped correctly.

In the sample, the second group of data from the China Shanghai Stock Exchange belongs to this group. On the contrary, the first group of US volunteer XBRL financial reports has been used to reproduce the pdf formatted financial reports, which would certainly affect the quality of this group of report regarding the amount of information included. Therefore, markings of random non-XBRL of the same period in the same region are included to assist comparative analysis.

2. Regulatory or Government filing

Instance documents are being used for filing with regulatory and governmental agencies around the world. In some cases, the instance document is the only document provided, while in other cases the filing is accompanied by traditional documents that are human readable. A distinction needs to be made between these two situations. Where the instance document is provided alone, the recipient will require quality that the data included therein is accurate, properly stated and in accordance with the applicable rules and legislation, and will require quality that the proper taxonomy is used and applied correctly. Where traditional documents accompany the instance documents, the user will also require assurance

that the data in the traditional documents is the same as the data in the instance document and meets the regulatory and legislative requirements. The first group of data from the Shanghai Stock Exchange and the financial reports from the Korean DART system belongs to this category.

3. XBRL instance document along with a style sheet presenting information (print): a. an XBRL instance document along with a style sheet (of a third party) presenting information (print) b. an XBRL instance document along with a style sheet (company specific) presenting information (print). In these cases, an XBRL instance document is prepared and then used to generate financial statements or reports, either for general purpose reporting (instance a) or for specified purposes reporting (instance b). Both the instance document and the style sheet are then presented to the users. In these cases, the users will be likely to use the instance document to import the data into their analysis tools or spread sheets. They require quality that the instance document has been prepared using the appropriate taxonomy, that the data have been properly tagged and mapped, and that the instance document has been properly rendered into readable form in the style sheet and contains the same data. They may also require quality on the style sheet itself, including the data therein – because style sheets are programming tools and must therefore be treated with caution. The second group of US EDGAR online data belongs to this group.

4. XBRL instance document only

This scenario is most likely to occur in the case of filings with regulatory agencies and governments, which is covered in scenario 2. There are also indications that this scenario will occur when financial statements in XBRL format serve to provide the needed and legal mandated information. In this

case, the users will require assurance that the instance document has been prepared using the taxonomy that is appropriate to their specified purposes and has been properly tagged and mapped. They may also require assurance on the underlying data in the filing, such as the current audit opinion on paper filings, like the financial statements. The only XML group in type 2, where these XBRL formatted financial reports only available in raw coding, feature these types of data.

5. XBRL based processes and controls (preparation of an instance document)

In any of those situations where instance documents are prepared, the users may require quality with regard to the processes used for preparation. This would include the XBRL specific processes such as taxonomy selection, and tagging, but would also include, for instance, the other processes and controls involved, such as the division of duties and the oversight and review controls employed.

6. Using XBRL internally for the (internal) reporting process

There may be situations where XBRL is used internally to produce financial statements and other reports, effectively becoming one of the technologies used in the preparation process. In these cases, no particular assurance is required on the XBRL portion of the process, but assurance is required on the overall system of controls over financial reporting. This may involve the internal audit function.

In these situations, the provision of the required quality will necessitate the consideration of the adequacy of the controls over the XBRL specific

processes in the context of the overall system of controls for which the assurance is required. From a quality point of view, the XBRL portion of the system is fundamentally no different than any of the other technological components of the system.

In all, considering the type of financial reports in XBRL and non-XBRL format and whether these data were originally generated from the other type of data, a random selection of financial reports from the same region in the same year are included in the sample. Figure 23 demonstrates the initial sample pool for XBRL and non-XBRL formatted financial reports.

**Figure 23  Financial report sample selection**
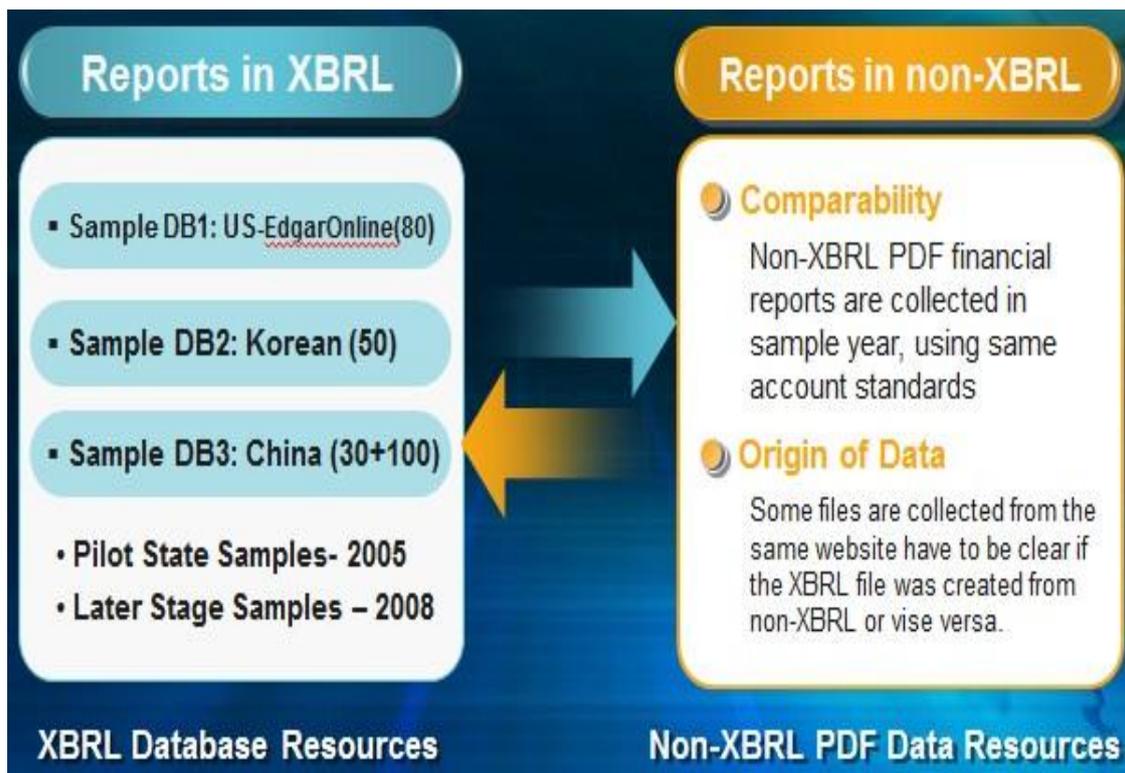


Later on, after data became available, the sample pool was expanded to five groups of XBRL formatted financial report and five groups of non-XBRL financial reports from the XBRL sample or similar resources. In late 2010, after PI-navigator database was introduced, 500 non-XBRL

formatted samples from PI-navigator were observed to replace markings in the analysis of this chapter because they are much more consistent than those earlier, randomly collected non-XBRL financial reports. The first two groups of XBRL and non-XBRL financial reports sample are taken from the US EDGAR online system, where the first group is pioneer volunteer XBRL filing and the second group is the official XBRL filing. And the second two groups of samples are from Shanghai Stock Exchange system, in which the first XBRL group is only available in raw XML format, and the other group in advanced web integrated format. The final group of data is from the Korean DART system where XBRL data has been consistently used and generated with added features each year.

### 4.1.1 Longitudinal comparison

XBRL formatted financial reports are selected due to data availability and natural of representative features in the development of XBRL taxonomy and applications, as explained previously in the other section. The following sub-sections present the details of the scoring for each sampled reports.

Series US-01, Type: Annual Report, Year: 2004-2007
Sample Size: 100 Format: Web XBRL, Type: Volunteer Filing
Resource: U.S. Securities & Exchange Commission
Link: http://216.241.101.197/viewer  (EDGAR Online)

Figure 24 shows the screen cut for DEGAR Online's XBRL FR database in I-Metrix, while Figure 25 demonstrates the alternative of an XBRL formatted financial report into PDF presentation format.

**Figure 24 EDGAR Online financial report database**
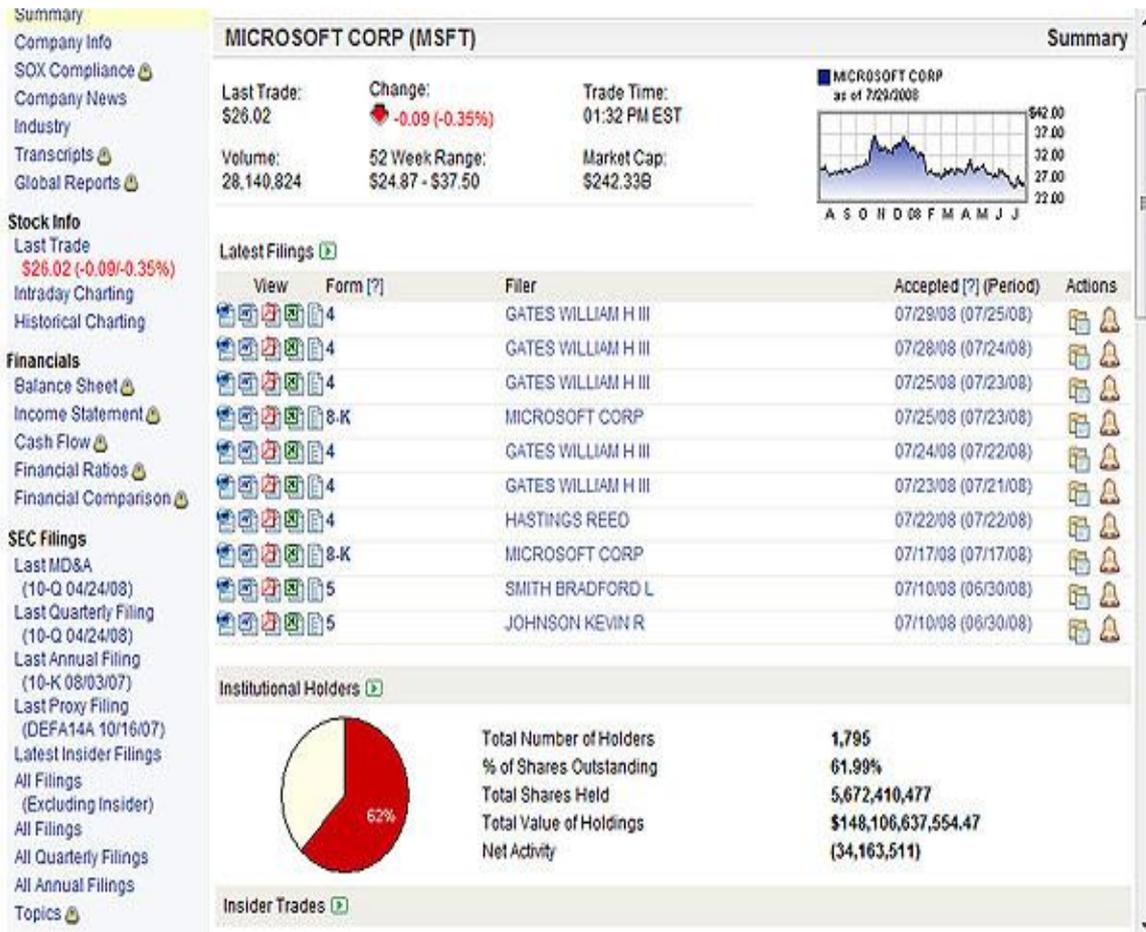


**Figure 25  I-Metrix data sample**
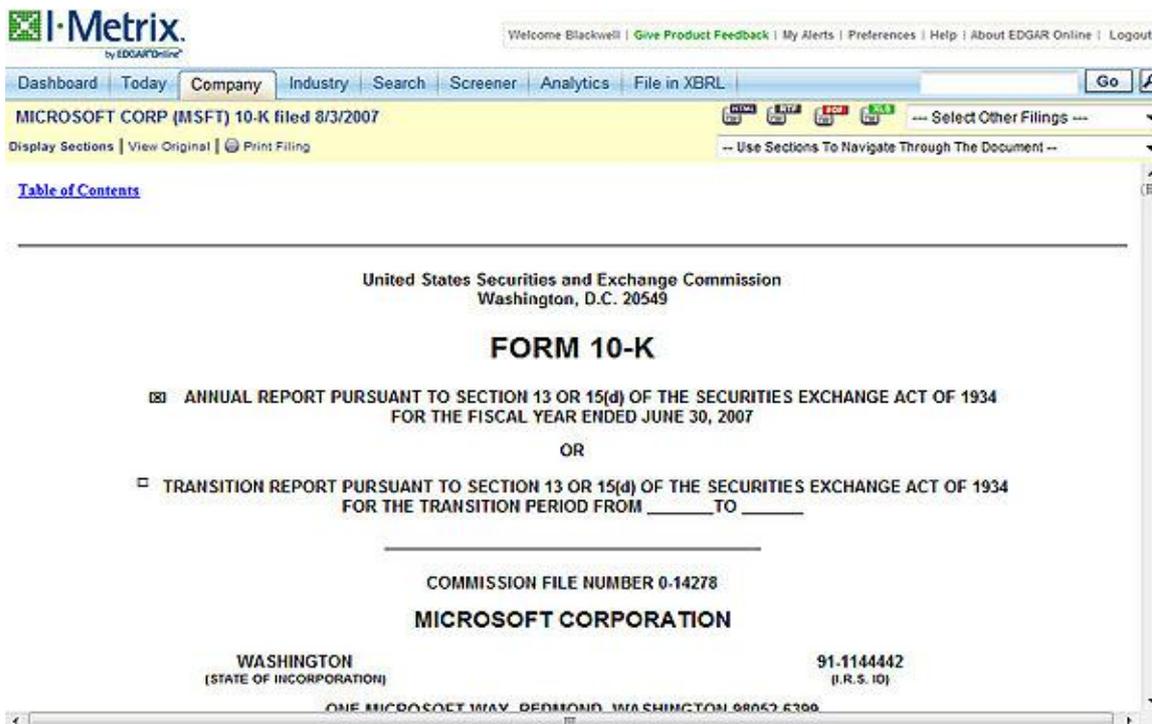
Marking Results are listed in Table 20. Please refer to appendix for detailed marking for each sample.

**Table 20  FR marking result - US01 XBRL**

| Data Quality Category | Data Quality Dimensions | Min | Max | Average | Overall |
|---|---|---|---|---|---|
| **Intrinsic** | **Accuracy** | 3 | 9 | 6.23 | 7 |
| | **Objectivity** | 5 | 10 | 7.35 | |
| | **Believability** | 4 | 8 | 5.86 | |
| | **Reputation** | 4 | 10 | 8.67 | |
| **Accessibility** | **Accessibility** | 6 | 10 | 7.35 | 6 |
| | **Access Security** | 3 | 8 | 5.24 | |
| **Contextual** | **Relevancy** | 4 | 9 | 5.83 | 5 |
| | **Value-Added** | 2 | 7 | 4.41 | |
| | **Timeliness** | 3 | 8 | 5.37 | |
| | **Completeness** | 2 | 7 | 4.58 | |
| | **Amount of Data** | 3 | 9 | 5.19 | |
| **Represent-ational** | **Interpretability** | 2 | 7 | 4.28 | 5 |
| | **Ease of understanding** | 2 | 9 | 5.92 | |
| | **Concise Representation** | 3 | 9 | 5.37 | |
| | **Consistent Representation** | 4 | 8 | 5.25 | |

*N=100

Series US-02, Type: Annual Report, Year: 2008-2009

Sample Size: 100 Format: Web XBRL, Type: Official XBRL Web Filing

Resource: U.S. Securities & Exchange Commission

Link: http://pro.edgar-online.com/expandedsearch.aspx (EDGAR Online Pro)

Figure 26 shows the EDGAR Online's XBRL FR database in the mandatory period, from which an added option of 'viewing filing in XBRL' can be seen. Figure 27 shows the presentation view of financial reports when automatically translated from XBRL FR, which is more graphic and has options to compare the data with other XBRL FR.

**Figure 26  EDGAR Pro database**



**Figure 27 EDGAR Pro data sample**

Table 21 shows the markings of these 100 XBRL FR in the mandatory period.

**Table 21  FR marking result - US02 XBRL**

| Data Quality Category | Data Quality Dimensions | Min | Max | Average | Overall |
|---|---|---|---|---|---|
| **Intrinsic** | **Accuracy** | 7 | 10 | 9.29 | **8** |
| | **Objectivity** | 6 | 9 | 7.87 | |
| | **Believability** | 6 | 10 | 8.19 | |
| | **Reputation** | 5 | 10 | 7.62 | |
| **Accessibility** | **Accessibility** | 5 | 9 | 6.33 | **7** |
| | **Access Security** | 6 | 10 | 7.85 | |
| **Contextual** | **Relevancy** | 2 | 9 | 7.21 | **7** |
| | **Value-Added** | 3 | 8 | 5.20 | |
| | **Timeliness** | 4 | 8 | 6.74 | |
| | **Completeness** | 3 | 9 | 7.11 | |
| | **Amount of Data** | 5 | 10 | 7.32 | |
| **Represent-ational** | **Interpretability** | 5 | 9 | 6.29 | **7** |
| | **Ease of Understanding** | 4 | 10 | 7.86 | |
| | **Concise Representation** | 5 | 9 | 6.46 | |
| | **Consistent Representation** | 5 | 10 | 7.75 | |

*N=100

Series CN-01, Type: Annual Report, Year: 2005

Pool Size: 827, Sample Size: 100 Format: Raw XML

Resource: Chinese Shanghai Stock Exchange

Link: http://www.sse.com.cn/sseportal/webapp/datapresent/SSEXBRLFileListAct

Figure 28 demonstrates the user interface when collecting XBRL FR from the Shanghai Stock Exchange FR database in the first period of XBRL adoption. There was only one option available, which is downloading the original raw XML formatted data (Table 22).

**Figure 28 Shanghai Stock Exchange FR database -CN01 XBRL**



**Table 22 Shanghai Stock Exchange FR Sample - CN01 XBRL**

```xml
<?xml version="1.0" encoding="UTF-8" ?>
- <xbrl xmlns="http://www.xbrl.org/2003/instance" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:link="http://www.xbrl.org/2003/linkbase" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:iso4217="http://www.xbrl.org/2003/iso4217" xmlns:clcid-cgi="http://www.xbrl-cn.org/cn/lcid/rpt/cgi/2005-
12-31" xmlns:clcid-common="http://www.xbrl-cn.org/cn/lcid/rpt/common/2005-12-31" xmlns:clcid-
gcd="http://www.xbrl-cn.org/cn/lcid/rpt/gcd/2005-12-31" xmlns:clcid-pte="http://www.xbrl-
cn.org/cn/lcid/common/pte/2005-12-31" xmlns:xbrl="http://www.xbrl.org/2003/instance" xmlns:clcid-ci-
qr="http://www.xbrl-cn.org/cn/lcid/ci/qr/2006-03-31" xsi:schemaLocation="http://www.xbrl-
cn.org/cn/lcid/ci/qr/2006-03-31 http://www.xbrl-cn.org/cn/lcid/ci/qr/2006-03-31/clcid-ci-qr-2006-03-31.xsd">
- <!--
schemaRef
  -->
  <link:schemaRef xlink:type="simple" xlink:href="http://www.xbrl-cn.org/cn/lcid/ci/qr/2006-03-31/clcid-ci-qr-2006-
03-31.xsd" />
- <!--
context
  -->
- <context id="C_instant_20060331">
- <entity>
  <identifier scheme="http://www.sse.com.cn">600000</identifier>
  </entity>
- <period>
  <instant>2006-03-31</instant>
  </period>
  </context>
```

```xml
- <context id="C_instant_20051231">
- <entity>
  <identifier scheme="http://www.sse.com.cn">600000</identifier>
  </entity>
- <period>
  <instant>2005-12-31</instant>
  </period>
  </context>
- <context id="C_duration_20060101_20060331">
- <entity>
  <identifier scheme="http://www.sse.com.cn">600000</identifier>
  </entity>
- <period>
  <startDate>2006-01-01</startDate>
  <endDate>2006-03-31</endDate>
  </period>
  </context>
- <!--
unit
  -->
- <unit id="U_pure">
  <measure>pure</measure>
  </unit>
- <unit id="U_CNY">
  <measure>iso4217:CNY</measure>
  </unit>
- <!--
fact
  -->
- <clcid-gcd:WenDangLeiXing>
  <clcid-gcd:BaoGaoLeiBie contextRef="C_instant_20060331">一季度报告正文</clcid-gcd:BaoGaoLeiBie>
  <clcid-gcd:BaoGaoLeiBieBianMa contextRef="C_instant_20060331">GB0501</clcid-gcd:BaoGaoLeiBieBianMa>
  </clcid-gcd:WenDangLeiXing>
  <clcid-cgi:GongSiAGuJianCheng contextRef="C_instant_20060331">浦发银行</clcid-cgi:GongSiAGuJianCheng>
  <clcid-cgi:GongSiAGuDaiMa contextRef="C_instant_20060331">600000</clcid-cgi:GongSiAGuDaiMa>
- <clcid-cgi:DongShiHuiMiShuQingKuang>
  <clcid-cgi:GongSiDongShiHuiMiShuXingMing contextRef="C_instant_20060331">沈 思</clcid-cgi:GongSiDongShiHuiMiShuXingMing>
  <clcid-cgi:GongSiDongShiHuiMiShuLianXiDiZhi contextRef="C_instant_20060331">上海市中山东一路 12 号</clcid-cgi:GongSiDongShiHuiMiShuLianXiDiZhi>
  <clcid-cgi:GongSiDongShiHuiMiShuDianHua contextRef="C_instant_20060331">021-63611226</clcid-cgi:GongSiDongShiHuiMiShuDianHua>
  <clcid-cgi:GongSiDongShiHuiMiShuChuanZhen contextRef="C_instant_20060331">021- 63230807</clcid-cgi:GongSiDongShiHuiMiShuChuanZhen>
  <clcid-cgi:GongSiDongShiHuiMiShuDianZiXinXiang contextRef="C_instant_20060331">shens2@spdb.com.cn</clcid-cgi:GongSiDongShiHuiMiShuDianZiXinXiang>
  </clcid-cgi:DongShiHuiMiShuQingKuang>
- <clcid-cgi:ZhengQuanShiWuDaiBiaoQingKuang>
  <clcid-cgi:GongSiZhengQuanShiWuDaiBiaoXingMing contextRef="C_instant_20060331">杨国平 吴 蓉</clcid-cgi:GongSiZhengQuanShiWuDaiBiaoXingMing>
  <clcid-cgi:GongSiZhengQuanShiWuDaiBiaoLianXiDiZhi contextRef="C_instant_20060331">上海市中山东一路 12 号</clcid-cgi:GongSiZhengQuanShiWuDaiBiaoLianXiDiZhi>
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  <clcid-cgi:GongSiZhengQuanShiWuDaiBiaoChuanZhen contextRef="C_instant_20060331">021- 63230807</clcid-cgi:GongSiZhengQuanShiWuDaiBiaoChuanZhen>
  <clcid-cgi:GongSiZhengQuanShiWuDaiBiaoDianZiXinXiang contextRef="C_instant_20060331">shens2@spdb.com.cn</clcid-cgi:GongSiZhengQuanShiWuDaiBiaoDianZiXinXiang>
  </clcid-cgi:ZhengQuanShiWuDaiBiaoQingKuang>
  <clcid-pte:MeiGuJingZiChan contextRef="C_instant_20060331" decimals="2" unitRef="U_pure">4.01</clcid-pte:MeiGuJingZiChan>
  <clcid-pte:MeiGuJingZiChan contextRef="C_instant_20051231" decimals="2" unitRef="U_pure">3.97</clcid-pte:MeiGuJingZiChan>
  <clcid-pte:TiaoZhengHouDeMeiGuJingZiChan contextRef="C_instant_20060331" decimals="2" unitRef="U_pure">4.01</clcid-pte:TiaoZhengHouDeMeiGuJingZiChan>
  <clcid-pte:TiaoZhengHouDeMeiGuJingZiChan contextRef="C_instant_20051231" decimals="2" unitRef="U_pure">3.97</clcid-pte:TiaoZhengHouDeMeiGuJingZiChan>
  <clcid-pte:JingLiRunQuanMianTanBaoMeiGuShouYi contextRef="C_duration_20060101_20060331" decimals="3" unitRef="U_pure">0.169</clcid-pte:JingLiRunQuanMianTanBaoMeiGuShouYi>
  <clcid-pte:ZuiXinMeiGuShouYi contextRef="C_duration_20060101_20060331" unitRef="U_pure" xsi:nil="true" />
  <clcid-pte:JingLiRunQuanMianTanBaoJingZiChanShouYiLv contextRef="C_duration_20060101_20060331" decimals="2" unitRef="U_pure">4.23</clcid-pte:JingLiRunQuanMianTanBaoJingZiChanShouYiLv>
  <clcid-pte:KouChuFeiJingChangXingSunYiDeJingLiRunDeJingZiChanShouYiLv contextRef="C_duration_20060101_20060331" decimals="2" unitRef="U_pure">4.23</clcid-pte:KouChuFeiJingChangXingSunYiDeJingLiRunDeJingZiChanShouYiLv>
  <clcid-cgi:BaoGaoQiMoGuDongZongShu contextRef="C_instant_20060331" decimals="0" unitRef="U_pure">183893</clcid-cgi:BaoGaoQiMoGuDongZongShu>
  <clcid-pte:ZiChanZongJi contextRef="C_instant_20060331" decimals="-3" unitRef="U_CNY">599443356000</clcid-pte:ZiChanZongJi>
  <clcid-pte:ZiChanZongJi contextRef="C_instant_20051231" decimals="-3" unitRef="U_CNY">573066623000</clcid-pte:ZiChanZongJi>
  <clcid-pte:GuDongQuanYiHeJi contextRef="C_instant_20060331" decimals="-3" unitRef="U_CNY">15679640000</clcid-pte:GuDongQuanYiHeJi>
  <clcid-pte:GuDongQuanYiHeJi contextRef="C_instant_20051231" decimals="-3" unitRef="U_CNY">15525921000</clcid-pte:GuDongQuanYiHeJi>
  <clcid-pte:JingYingHuoDongXianJinLiuLiangJingE contextRef="C_duration_20060101_20060331" decimals="0" unitRef="U_CNY">1660599</clcid-pte:JingYingHuoDongXianJinLiuLiangJingE>
  </xbrl>
```

* Data Sample ID - CN_600000.SS_GB0501_2006.xml

Table 23 lists the results of 100 of these types of XBRL formatted financial reports in the Shanghai Stock Exchange System.

**Table 23  FR marking result - CN01 XBRL**

| Data Quality Category | Data Quality Dimensions | Min | Max | Average | Overall |
|---|---|---|---|---|---|
| Intrinsic | Accuracy | 7 | 10 | **8.35** | 7 |
| | Objectivity | 7 | 10 | 7.12 | |
| | Believability | 2 | 9 | 5.43 | |
| | Reputation | 5 | 9 | 6.79 | |
| Accessibility | Accessibility | 4 | 9 | 6.83 | 5 |
| | Access Security | 1 | 5 | **2.83** | |
| Contextual | Relevancy | 2 | 7 | 4.39 | 3 |
| | Value-Added | 1 | 5 | 2.72 | |
| | Timeliness | 2 | 6 | 3.45 | |
| | Completeness | 1 | 5 | 2.33 | |
| | Amount of Data | 1 | 4 | **2.27** | |
| Represent-ational | Interpretability | 2 | 6 | 3.24 | 4 |
| | Ease of Understanding | 1 | 5 | 2.33 | |
| | Concise Representation | 1 | 6 | 3.18 | |
| | Consistent Representation | 3 | 8 | 5.87 | |

*N=100

Series CN-02, Type: Annual Report, Year: 2008 & 2009

Pool Size: 864 + 882, Sample Size: 100 Format: Web XBRL Interface

Added Functions: Comparison (max5), PDF Source Link, Feedback

Resource: Shanghai Stock Exchange

Link: http://listxbrl.sse.com.cn/ssexbrl/index.htm

Figure 29 demonstrates the user interface when collecting XBRL FR from the Shanghai Stock Exchange System. In the new interface, there are four options available this time (comparing with the first adoption period).  The middle two links options for each financial report are viewing it in XBRL format and viewing it in PDF format. The one on the left shows detailed

profile of the listed company of that report. The last option has utilised XBRL's web application to let users select and compare financial reports for different time period or different companies.

**Figure 29  Shanghai Stock Exchange FR database - CN02 XBRL**



**Figure 30  Shanghai Stock Exchange data sample - CN02 XBRL**



*Data Sample ID – 600016, annual, 2008

Figure 30 demonstrates the XBRL view of financial reports in the Shanghai Stock Exchange System. The contents of these financial reports have been integrated with the web application programme, and automatically distributed into different sections of the webpage. The features of unlimited page length on fixed presentation view of these financial reports give users a much clear view of their contents.

Table 24 listed the marking of 100 financial reports on the Shanghai Stock Exchange System in the second XBRL adoption period.

**Table 24 FR marking result - CN02 XBRL**

| Data Quality Category | Data Quality Dimensions | Min | Max | Average | Overall |
|---|---|---|---|---|---|
| **Intrinsic** | **Accuracy** | 6 | 10 | **9.20** | **8** |
| | **Objectivity** | 4 | 8 | 6.98 | |
| | **Believability** | 5 | 10 | 8.83 | |
| | **Reputation** | 6 | 8 | 8.12 | |
| **Accessibility** | **Accessibility** | 7 | 10 | **9.34** | **8** |
| | **Access Security** | 4 | 9 | 7.22 | |
| **Contextual** | **Relevancy** | 5 | 9 | 6.48 | 7 |
| | **Value-Added** | 5 | 10 | 7.95 | |
| | **Timeliness** | 6 | 10 | **8.19** | |
| | **Completeness** | 3 | 10 | 6.87 | |
| | **Amount of Data** | 5 | 9 | 6.71 | |
| **Represent-ational** | **Interpretability** | 3 | 8 | 6.25 | 7 |
| | **Ease of Understanding** | 5 | 10 | 7.34 | |
| | **Concise Representation** | 4 | 8 | 5.15 | |
| | **Consistent Representation** | 6 | 9 | 7.37 | |

*N=100

Series KR, Type: Annual Report, Year: 2007-2008

Pool Size: 15019, Sample Size: 100 Format: Web XBRL Interface

Resource: South Korean DART (Data Analysis, Retrieval and Transfer) System

Link: http://englishdart.fss.or.kr/dsbd001/main.do

Ref: http://xbrl.kosdaq.com/?lang=english

Figure 31 demonstrates the user interface of South Korean FR dataset on DART system. From the screenshot, it can be identified that DART system has used the multi-language features of XBRL formatted data, even at an early stage. The web application on DART system automatically translates the meaning of mathematical data of each financial report into English language, so that international investor can read these financial reports directly.

**Figure 31 South Korean FR database - KR XBRL**

Figure 32 demonstrates the XBRL web view of financial reports on the DART system. Although all the mathematical data in the financial reports is explained in English language, the textual contents it contains are still in the original Korean language. Software application cannot fully translate the meaning of these text-formatted contents.

**Figure 32  DART FR data sample**

Table 25 lists all the markings of 100 XBRL formatted financial reports from the South Korean DART system.

**Table 25  FR marking result - KR XBRL**

| Data Quality Category | Data Quality Dimensions | Min | Max | Average | Overall |
|---|---|---|---|---|---|
| Intrinsic | Accuracy | 5 | 10 | **7.84** | 7 |
| | Objectivity | 5 | 8 | 6.29 | |
| | Believability | 7 | 9 | 6.37 | |
| | Reputation | 4 | 9 | 6.99 | |
| Accessibility | Accessibility | 5 | 10 | 8.38 | 6 |
| | Access Security | 2 | 7 | 4.32 | |
| Contextual | Relevancy | 3 | 9 | 7.21 | 6 |
| | Value-Added | 2 | 5 | 3.93 | |
| | Timeliness | 3 | 10 | 7.39 | |
| | Completeness | 4 | 9 | 6.29 | |
| | Amount of Data | 3 | 10 | 6.93 | |
| Represent-ational | Interpretability | 5 | 9 | 6.16 | 6 |
| | Ease of Understanding | 4 | 8 | 5.35 | |
| | Concise Representation | 2 | 10 | 7.54 | |
| | Consistent Representation | 3 | 10 | **8.21** | |

**\*N=100**

## 4.1.2 Crosswise comparison

The data in this section is abstracted from the same or similar resources to maintain the consistency and comparability of these financial reports. The first two groups both come from EDGAR online system and were downloaded from the data link beside the XBRL data. The third group has its origin in different resources with a similar provider because the XBRL formatted data in the first adoption period is only available in xml file format with no PDF format downloadable. The last two groups come from the same resources because the technology has improved. At the same time, a random collection of non-XBRL formatted reports is collected and included in the final analysis to compare with these samples.

Later on, considering the large standard deviation of these markings of 500 randomly collected financial reports, more reliable results could probably be achieved through markings of financial reports from the same database. PI-navigator was a new database available in 2010 that contains financial reports in non-XBRL formatted from many countries worldwide. Therefore, 500 additional financial reports, 100 from each time period and region according to the XBRL formatted financial reports, were collected and remarked in this section. These additional markings are added in each group of previous non-XBRL FR markings shown below.

Series US-01, Type: Annual Report, Year: 2004-2007

Sample Size: 100 Format: PDF

Resource: U.S. Securities & Exchange Commission + Random Web

Link: http://216.241.101.197/viewer  (EDGAR Online)

Figure 33 is a list of non-XBRL formatted financial reports that were directly collected from the EDGAR Online database, by assuming that these PDF files were not automatically translated version of XBRL files.

**Figure 33 FR sample data pool - US01 Non-XBRL**

| | | |
|---|---|---|
| 3M Co 2006 | Broadridge Financial Solutions, Inc. 2008 | Ford Motor Credit Co LLC 2006 |
| 3M Co 2007 | CME Group Inc. 2007 | Ford Motor Credit Co LLC 2007 |
| Adobe Systems Inc 2005 | CME Group Inc. 2008 | General Electric Co 2006 |
| Adobe Systems Inc 2006 | Comcast Corp 2006 | General Electric Co 2007 |
| Adobe Systems Inc 2007 | Comcast Corp 2007 | General Mills Inc 2008 |
| AGL Resources Inc 2007 | Commonwealth Edison Co 2006 | Healthcare Realty Trust Inc 2008 |
| Alcoa Inc 2007 | Commonwealth Edison Co 2007 | ICU Medical IncDe 2007 |
| Altria Group, Inc. 2006 | Community Bankers Acquisition Corp. 2006 | Infosys Technologies Ltd 2005 |
| Altria Group, Inc. 2007 | Dominion Resources Inc Va 2007 | Infosys Technologies Ltd 2006 |
| American Income Fund Inc Va 2007 | Dow Chemical Co DE 2005 | Infosys Technologies Ltd 2007 |
| American Municipal Income Portfolio Inc 2007 | Dow Chemical Co DE 2006 | Infosys Technologies Ltd 2008 |
| American Select Portfolio Inc 2007 | Dow Chemical Co DE 2007 | International Business Machines Corp 2006 |
| American Strategic Income Portfolio Inc 2007 | Dupont E I de Nemours & Co 2006 | International Business Machines Corp 2007 |
| American Strategic Income Portfolio Inc II 2007 | Dupont E I de Nemours & Co 2007 | International Securities Exchange Holdings, Inc. |
| American Strategic Income Portfolio Inc III 2007 | E Trade Financial Corp 2006 | Liberty Global, Inc. 2007 |
| Anadarko Petroleum Corp 2006 | Edgar Online Inc 2004 | Liberty Media Corp 2007 |
| Anadarko Petroleum Corp 2007 | Edgar Online Inc 2005 | Lockheed Martin Corp 2006 |
| Autodesk Inc 2007 | Edgar Online Inc 2006_Income Statement Only | Lockheed Martin Corp 2007 |
| Autodesk Inc 2008 | Edgar Online Inc 2006_Statement of Financial Position Only | Microsoft Corp 2005 |
| Automatic Data Processing Inc 2006 | Edgar Online Inc 2007 | Microsoft Corp 2006 |
| Automatic Data Processing Inc 2007 | Englobal Corp 2006 -- | Microsoft Corp 2007 |
| Automatic Data Processing Inc 2008 | Englobal Corp 2007 -- | Microsoft Corp 2008 |
| Bank Bradesco 2005 | Exelon Generation Co LLC 2006 | Minnesota Municipal Income Portfolio Inc 2007 |
| Bank Bradesco 2006 | Exelon Generation Co LLC 2007 | Net Servicos de Comunicacao S A 2005 |
| Barnes Group Inc 2006 | Fastenal Co 2006 | Net Servicos de Comunicacao S A 2006 |
| Brazilian Petroleum Corp 2006 | Fastenal Co 2007 | Net Servicos de Comunicacao S A 2007 |
| Brazilian Petroleum Corp 2007 | First American Investment Funds Inc 2007 | NII Holdings Inc 2007 |
| Bristol Myers Squibb Co 2005 | First American Minnesota Municipal Income Fund II Inc 2007 | North American Technologies Group Inc Tx 200 |
| Bristol Myers Squibb Co 2006 | Ford Motor Co 2006 | NYSE Euronext 2007 |
| Broadridge Financial Solutions, Inc. 2007 | Ford Motor Co 2007 | Old Mutual Advisor Funds 2006 |

Figure 34 shows a screen cut of one of these sample files. This data on non-XBRL financial reports has a fixed view and cannot be directly abstracted for data analysis.

**Figure 34 FR sample - US01 Non-XBRL**



**American Select Portfolio Inc**
Annual Report Amended (2007-08-31)

| Financial Highlights (USD $) | SLA 2002 12/01/2001 - 11/30/2002 | SLA 2003 12/01/2002 - 11/30/2003 | SLA 2004 12/01/2003 - 11/30/2004 | SLA 2005 12/01/2004 - 08/31/2005 | SLA 2006 09/01/2005 - 08/31/2006 | SLA 2007 09/01/2006 - 08/31/2007 |
|---|---|---|---|---|---|---|
| Net Asset Value Per Share - Beginning Balance | 13.38 | 13.41 | 13.14 | 13.57 | 13.12 | 13 |
| Net Investment Income/(Loss) Per Share | 1.13 | 1.05 | 1.03 | 0.96 | 0.93 | 0.94 |
| Net Realized and Unrealized Gain/(Loss) Per Share | 0.17 | (0.04) | (0.26) | 0.12 | (0.15) | 0.08 |
| Income/(Loss) from Investment Operations Per Share | 1.3 | 1.01 | 0.77 | 1.08 | 0.78 | 1.02 |
| Distributions from Net Investment Income Per Share | (1.2) | (1.08) | (1.04) | (0.65) | (1.09) | (1.04) |
| Distributions from Net Realized Gain Per Share | | | | | (0.14) | (0.1) |
| Distributions Per Share - Total | (1.2) | (1.08) | (1.04) | (0.65) | (1.23) | (1.14) |
| Net Asset Value Per Share - Ending Balance | 13.48 | 13.41 | 13.14 | 13.57 | 13.12 | 13 |
| Market Value Per Share - Ending Balance | 12.86 | 13.64 | 12.79 | 12.45 | 12.12 | 12.37 |
| Total Return, Net Asset Value | 0.1013 [3] | 0.0772 [3] | 0.0597 [3] | 0.0847 [3,5] | 0.0612 [3] | 0.0813 [3] |
| Total Return, Market Value | 0.0391 [2] | 0.1492 [2] | 0.0144 [2] | 0.0261 [2,5] | 0.0786 [2] | 0.1165 [2] |
| Net Assets at End of Period | 143,698,072 | 143,015,978 | 140,061,728 | 144,642,233 | 139,913,118 | 138,561,068 |
| Ratio of Expenses to Average Weekly Net Assets Before Fee Reimbursements | 0.0282 | 0.0205 | 0.0187 | 0.0231 [1] | 0.0217 | 0.0273 |
| Ratio of Expenses to Average Weekly Net Assets After Fee Reimbursements | 0.0282 | 0.0205 | 0.0187 | 0.0231 [1] | 0.0217 | 0.0272 |
| Ratio of Expenses to Average Weekly Net Assets Excluding Interest Expense and Fee Reimbursements | 0.0147 | 0.0118 | 0.0106 | 0.0102 [1] | 0.0089 | 0.0102 |
| Ratio of Net Investment Income to Average Weekly Net Assets Before Fee Reimbursements | 0.0841 | 0.0779 | 0.0779 | 0.0977 [1] | 0.0711 | 0.0721 |
| Ratio of Net Investment Income to Average Weekly Net Assets After Fee Reimbursements | 0.0841 | 0.0779 | 0.0779 | 0.0977 [1] | 0.0711 | 0.0722 |
| Portfolio Turnover Rate | 0.31 | 0.38 | 0.13 | 0.35 | 0.32 | 0.59 |
| Amount of Borrowings Outstanding at End of Period | 28,500,000 | 48,669,390 | 41,282,101 | 30,064,820 | 31,573,408 | 41,456,112 |
| Per-Share Amount of Borrowings Outstanding at End of Period | 2.67 | 4.57 | 3.87 | 2.82 | 2.96 | 3.88 |
| Per-Share Amount of Net Assets, Excluding Borrowings, at End of Period | 16.15 | 17.98 | 17.01 | 16.39 | 16.08 | 16.88 |
| Asset Coverage Ratio | 6.04 [4] | 3.94 [4] | 4.39 [4] | 5.81 [4] | 5.43 [4] | 4.34 [4] |

[1] Annualized.

[2] Assumes reinvestment of distributions at actual prices pursuant to the fund's dividend reinvestment plan.

[3] Assumes reinvestment of distributions at net asset value.

[4] Represents net assets, excluding borrowings, at end of period divided by borrowings outstanding at end of period.

Table 26 lists all the markings for these non-XBRL formatted financial reports from EDGAR Online. Details of each marking are available in Appendix C.

**Table 26 Marking Results of Non-XBRL FR, US01, EDGAR Online**

| Data Quality Category | Data Quality Dimensions | Mark | Average |
|---|---|---|---|
| **Intrinsic** | **Accuracy** | 5 | |
| | **Objectivity** | **7** | 6 |
| | **Believability** | **7** | |
| | **Reputation** | 6 | |
| **Accessibility** | **Accessibility** | 4 | 5 |
| | **Access Security** | 6 | |
| **Contextual** | **Relevancy** | 5 | |
| | **Value-Added** | 4 | |
| | **Timeliness** | 5 | 4 |
| | **Completeness** | 4 | |
| | **Amount of Data** | 4 | |
| **Representational** | **Interpretability** | 4 | |
| | **Ease of understanding** | 4 | |
| | **Concise representation** | 5 | 4 |
| | **Consistent representation** | 6 | |

Table 27 is the updated marking of 100 non-XBRL formatted financial reports from PI-navigator database.

**Table 27 Marking Results of Non-XBRL FR, US01, PI-Navigator**

| Data Quality Category | Data Quality Dimensions | Min | Max | Average | Overall |
|---|---|---|---|---|---|
| Intrinsic | Accuracy | 3 | 7 | 5 | 6 |
| | Objectivity | 5 | 10 | 7 | |
| | Believability | 3 | 8 | 6 | |
| | Reputation | 4 | 8 | 6 | |
| Accessibility | Accessibility | 2 | 7 | 5 | 6 |
| | Access Security | 3 | 8 | 6 | |
| Contextual | Relevancy | 2 | 8 | 5 | 5 |
| | Value-Added | 1 | 7 | 4 | |
| | Timeliness | 4 | 7 | 5 | |
| | Completeness | 5 | 9 | 7 | |
| | Amount of Data | 3 | 8 | 5 | |
| Represent-ational | Interpretability | 3 | 9 | 6 | 6 |
| | Ease of Understanding | 4 | 10 | 7 | |
| | Concise Representation | 3 | 8 | 5 | |
| | Consistent Representation | 4 | 9 | 6 | |

Series US-02, Type: Annual Report, Year: 2008-2009

Sample Size: 100, format: PDF

Resource: U.S. Securities & Exchange Commission + Random Web

Link: http://pro.edgar-online.com/expandedsearch.aspx  (EDGAR Online Pro)

Figure 35 demonstrates the original data source for non-XBRL formatted financial reports in the mandatory 35period. Figure 36 is the screen cut for these files in PDF format. However, on the left side of the sample PDF, the graphic analysis looks like that it was created from XBRL formatted files. Considering some of these companies were not using out-sourcing, another

100 non-XBRL formatted financial reports from PI-navigator database have been highlighted to ensure consistency in these financial reports.

**Figure 35 FR sample data pool - US02 Non-XBRL**

| | | |
|---|---|---|
| | 497K | BLACKROCK MUNICIPAL BOND FUND, INC. |
| | 8-K | THERMODYNETICS INC |
| | 497K | BLACKROCK MUNICIPAL BOND FUND, INC. |
| | 6-K | PROVIDA PENSION FUND ADMINISTRATOR |
| | 497K | BLACKROCK MUNICIPAL BOND FUND, INC. |
| | 497K | BLACKROCK MUNICIPAL BOND FUND, INC. |
| | 497K | BLACKROCK MUNICIPAL BOND FUND, INC. |
| | 13F-HR | GREYLIN INVESTMENT MANGEMENT INC |
| | 497K | BLACKROCK MUNICIPAL BOND FUND, INC. |
| | 497K | BLACKROCK FUNDS II |
| | 4 | BROOKLINE BANCORP INC (FANGER MICHAEL J) |
| | 4 | CSP INC /MA/ (DELLOVO VICTOR) |
| | 497K | BLACKROCK FUNDS II |
| | 497K | BLACKROCK FUNDS II |
| | 4 | ORACLE CORP (ELLISON LAWRENCE JOSEPH) |
| | 4 | NEOGEN CORP (MORRICAL TERRI A) |
| | 424B3 | SCI ENGINEERED MATERIALS, INC. |
| | 4 | SOUTHWEST GEORGIA FINANCIAL CORP (BARBER CECIL H) |

**Figure 36 FR data sample - US02 Non-XBRL**
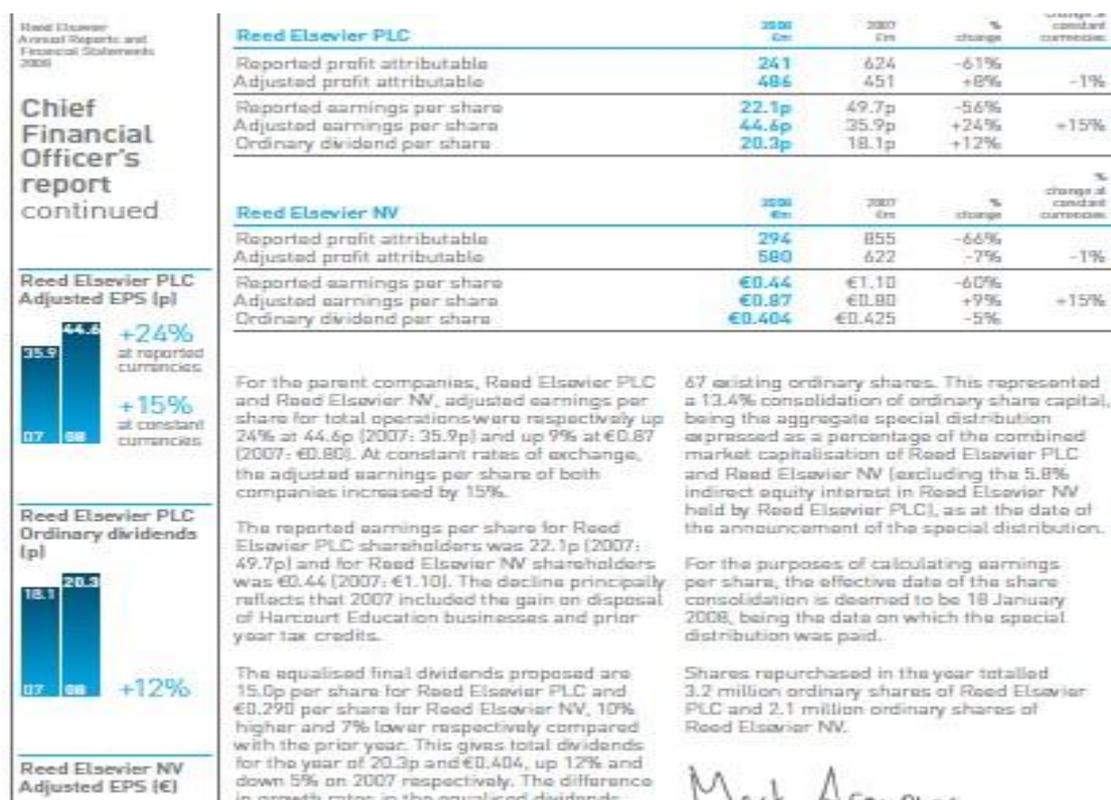


Table 28 lists the marking results of 100 non-XBRL formatted financial reports of the years 2008 and 2009 from the EDGAR Online system.

**Table 28 Marking results of non-XBRL FR, US02, EDGAR Online**

| Data Quality Category | Data Quality Dimensions | Mark | Average |
|---|---|---|---|
| **Intrinsic** | **Accuracy** | 8 | 7 |
| | **Objectivity** | 7 | |
| | **Believability** | 6 | |
| | **Reputation** | 7 | |
| **Accessibility** | **Accessibility** | 5 | 6 |
| | **Access Security** | 7 | |
| **Contextual** | **Relevancy** | 6 | 7 |
| | **Value-Added** | 7 | |
| | **Timeliness** | 7 | |
| | **Completeness** | 8 | |
| | **Amount of Data** | 8 | |
| **Representational** | **Interpretability** | 7 | 6 |
| | **Ease of understanding** | 7 | |
| | **Concise representation** | 5 | |
| | **Consistent representation** | 6 | |

Table 29 lists the updated markings of non-XBRL formatted reports of year 2008 and year 2009 from PI-navigator database.

**Table 29  Marking results of non-XBRL, US02, PI-navigator**

| Data Quality Category | Data Quality Dimensions | Min | Max | Average | Overall |
|---|---|---|---|---|---|
| **Intrinsic** | **Accuracy** | 4 | 10 | 7 | 7 |
| | **Objectivity** | 2 | 9 | 6 | |
| | **Believability** | 3 | 8 | 7 | |
| | **Reputation** | 5 | 10 | 7 | |
| **Accessibility** | **Accessibility** | 2 | 8 | 6 | 6 |
| | **Access Security** | 3 | 10 | 7 | |
| **Contextual** | **Relevancy** | 4 | 8 | 7 | 8 |
| | **Value-Added** | 5 | 10 | 8 | |
| | **Timeliness** | 3 | 9 | 7 | |
| | **Completeness** | 2 | 10 | 9 | |
| | **Amount of Data** | 6 | 10 | 8 | |
| **Represent-ational** | **Interpretability** | 3 | 9 | 5 | 7 |
| | **Ease of Understanding** | 5 | 10 | 7 | |
| | **Concise Representation** | 4 | 9 | 6 | |
| | **Consistent Representation** | 2 | 8 | 5 | |

Series CN-11, Type: Annual Report, Year: 2005

Pool Size: 1213 Filtered Sample Size: 100, Format: PDF

Resource: Shenzhen Stock Exchange

Web Link: http://disclosure.szse.cn/m/search0425.jsp

Figure 37 demonstrates the interface of the Shenzhen Stock Exchange database and Figure 38 presents the screen cut of these samples. In year 2006 Shenzhen Stock Exchange have not used XBRL format for financial reporting yet, therefore their annual financial reports attached on their official webpages in PDF format are the ideal sample to compare with the XBRL formatted financial reports from the Shanghai Stock Exchange.

**Figure 37 FR sample database - CN01 Non-XBRL**



**Figure 38  FR data sample - CN01 Non-XBRL**



\* Data Sample ID – 17511095.PDF, annual, 2005

Table 30 lists the marking results of 100 non-XBRL formatted financial reports from Shenzhen Stock Exchange in the year 2005.

**Table 30 Marking results of non-XBRL FR, CN01, SZSE**

| Data Quality Category | Data Quality Dimensions | Mark | Average |
|---|---|---|---|
| Intrinsic | Accuracy | 5 | 6 |
| | Objectivity | 8 | |
| | Believability | 6 | |
| | Reputation | 6 | |
| Accessibility | Accessibility | 5 | 6 |
| | Access Security | **7** | |
| Contextual | Relevancy | 8 | 7 |
| | Value-Added | 7 | |
| | Timeliness | 6 | |
| | Completeness | 7 | |
| | Amount of Data | **7** | |
| Representational | Interpretability | 6 | 6 |
| | Ease of understanding | 7 | |
| | Concise representation | 6 | |
| | Consistent representation | 4 | |

Table 31 lists the marking results of 100 non-XBRL formatted Chinese financial reports from the PI-navigator database in year 2005.

**Table 31 Marking results of non-XBRL FR, CN01, PI-navigator**

| Data Quality Category | Data Quality Dimensions | Min | Max | Average | Overall |
|---|---|---|---|---|---|
| Intrinsic | Accuracy | 3 | 9 | 6 | 6 |
| | Objectivity | 4 | 10 | 7 | |
| | Believability | 3 | 8 | 6 | |
| | Reputation | 4 | 9 | 5 | |
| Accessibility | Accessibility | 3 | 7 | 5 | 5 |
| | Access Security | 5 | 8 | 6 | |
| Contextual | Relevancy | 4 | 9 | 7 | 7 |
| | Value-Added | 5 | 10 | 7 | |
| | Timeliness | 3 | 9 | 6 | |
| | Completeness | 6 | 10 | 8 | |
| | Amount of Data | 5 | 8 | **7** | |
| Representational | Interpretability | 5 | 10 | 7 | 6 |
| | Ease of Understanding | 4 | 8 | 6 | |
| | Concise Representation | 3 | 9 | 7 | |
| | Consistent Representation | 2 | 6 | 4 | |

*N=100

Series CN-12, Type: Annual Report, Year: 2008 & 2009

Sample Size: 100, Formats: PDF

Resource: Chinese Shanghai Stock Exchange

Link:http://www.sse.com.cn/sseportal/webapp/datapresent/SSEPeriodicPDF?COMPANY_CODE=600016&REPORTYEAR=2008&REPORTTYPE=n

Figure 39 demonstrates the collection methods for non-XBRL formatted financial reports in the Shanghai Stock Exchange system.

**Figure 39 FR sample database - CN02 Non-XBRL**



Figure 40 is a sample of the PDF formatted financial reports. Being that most listed companies in the Shanghai Stock Exchange were using outsourcing, many of these non-XBRL formatted financial reports were very possibly used to prepare producing XBRL formatted financial reports.

**Figure 40 FR sample - CN02 Non-XBRL**



*Data Sample – 600016, annual, 2008

Table 32 lists the markings of non-XBRL formatted financial reports in the second adoption period for the Shanghai Stock Exchange.

**Table 32  Marking results of non-XBRL FR, CN02, SHSE**

| Data Quality Category | Data Quality Dimensions | Mark | Average |
|---|---|---|---|
| **Intrinsic** | **Accuracy** | 8 | 8 |
| | **Objectivity** | 7 | |
| | **Believability** | 9 | |
| | **Reputation** | 8 | |
| **Accessibility** | **Accessibility** | 6 | 7 |
| | **Access Security** | 8 | |
| **Contextual** | **Relevancy** | 7 | 8 |
| | **Value-Added** | 8 | |
| | **Timeliness** | 8 | |
| | **Completeness** | 8 | |
| | **Amount of Data** | 8 | |
| **Representational** | **Interpretability** | 5 | 6 |
| | **Ease of understanding** | 7 | |
| | **Concise representation** | 5 | |
| | **Consistent representation** | 6 | |

Table 33 lists the updated results of 100 financial reports for Chinese companies using non-XBRL that were collected from the PI-navigator, with the same accounting period as those 100 collected from the Shanghai Stock Exchange.

**Table 33 Marking results of non-XBRL FR, CN02, PI-navigator**

| Data Quality Category | Data Quality Dimensions | Min | Max | Average | Overall |
|---|---|---|---|---|---|
| **Intrinsic** | **Accuracy** | 5 | 10 | 7 | 7 |
| | **Objectivity** | 3 | 9 | 7 | |
| | **Believability** | 7 | 10 | 8 | |
| | **Reputation** | 6 | 9 | 8 | |
| **Accessibility** | **Accessibility** | 5 | 9 | 7 | 7 |
| | **Access Security** | 4 | 10 | 8 | |
| **Contextual** | **Relevancy** | 5 | 9 | 7 | 8 |
| | **Value-Added** | 6 | 10 | 9 | |
| | **Timeliness** | 5 | 9 | 7 | |
| | **Completeness** | 6 | 10 | 8 | |
| | **Amount of Data** | 6 | 10 | 8 | |
| **Representational** | **Interpretability** | 3 | 8 | 6 | 6 |
| | **Ease of Understanding** | 5 | 9 | 6 | |
| | **Concise Representation** | 2 | 8 | 6 | |
| | **Consistent Representation** | 3 | 9 | 7 | |

Series KR, Type: Annual Report, Year: 2007

Sample Size: 100, Format: PDF

Resource: Korean Exchange, Link: http://eng.krx.co.kr + Random Web

Figure 41 demonstrates the collection method for non-XBRL formatted financial reports in South Korean.

**Figure 41 FR database - South Korean Non-XBRL**
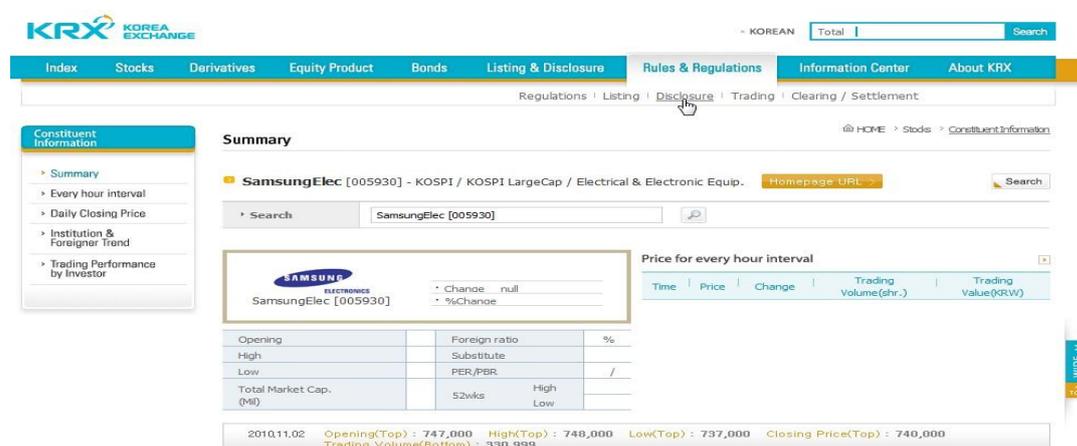
Figure 42 shows a screen cut of these samples. These PDF formatted financial reports are in the English language. There is a minor concern that these financial reports were directly created from XBRL formatted financial reports.

**Figure 42 FR sample - South Korean Non-XBRL**



Table 34 lists the results of 100 non-XBRL formatted financial reports from the Korean Stock Exchange.

**Table 34 Marking results of non-XBRL FR, Korean, KRX**

| Data Quality Category | Data Quality Dimensions | Mark | Average |
|---|---|---|---|
| **Intrinsic** | **Accuracy** | 6 | 5 |
| | **Objectivity** | 5 | |
| | **Believability** | 4 | |
| | **Reputation** | 5 | |
| **Accessibility** | **Accessibility** | 4 | 4 |
| | **Access Security** | 4 | |
| **Contextual** | **Relevancy** | 7 | 7 |
| | **Value-Added** | 6 | |
| | **Timeliness** | 6 | |
| | **Completeness** | 7 | |
| | **Amount of Data** | 8 | |
| **Representational** | **Interpretability** | 6 | 6 |
| | **Ease of understanding** | 6 | |
| | **Concise representation** | 7 | |
| | **Consistent representation** | 5 | |

Table 35 features the updated markings of non-XBRL formatted South Korean financial reports from the PI-navigator database.

**Table 35  FR marking result - KR Non-XBRL**

| Data Quality Category | Data Quality Dimensions | Min | Max | Average | Overall |
|---|---|---|---|---|---|
| **Intrinsic** | **Accuracy** | 4 | 10 | 7 | 6 |
| | **Objectivity** | 5 | 8 | 6 | |
| | **Believability** | 3 | 7 | 5 | |
| | **Reputation** | 4 | 7 | 4 | |
| **Accessibility** | **Accessibility** | 2 | 7 | 5 | 5 |
| | **Access Security** | 3 | 6 | 4 | |
| **Contextual** | **Relevancy** | 5 | 9 | 7 | 6 |
| | **Value-Added** | 3 | 7 | 5 | |
| | **Timeliness** | 4 | 8 | 6 | |
| | **Completeness** | 3 | 9 | 6 | |
| | **Amount of Data** | 7 | 10 | 8 | |
| **Represent-ational** | **Interpretability** | 4 | 8 | 6 | 7 |
| | **Ease of Understanding** | 5 | 9 | 7 | |
| | **Concise Representation** | 3 | 10 | 8 | |
| | **Consistent Representation** | 3 | 7 | 5 | |

*N=100

The scores above were generated in the collective spread sheet of separated results which are included in Appendix E3 through to Appendix E15. The average score of the making is rounded up. For example, the accuracy is 7.2576 has been rounded up to 7.

## 4.2 XBRL Versus non-XBRL formatted financial reports

This next section will compare the score of different sample groups separately and then put them together for a final analysis. The major differences between XBRL and non-XBRL will be investigated, alongside those differences for XBRL samples from the same region.

## US01 vs. US11, XBRL comparing with non-XBRL

From Figure 43 below, we can identify that the first group of XBRL in the EDGAR online has a higher quality than the non-XBRL reports in general. The Intrinsic, Accessibility, Representational features of the XBRL formatted financial reports are all slightly better than the non-XBRL formatted financial reports, while their Contextual features are similar. Both the XBRL and non-XBRL formatted financial reports have very low quality scores with an average of about 5 in 10.

However, when including the random samples, the score in Contextual and Representational quality are significantly higher than both of these data sets abstracted from the EDGAR online system, excepting the lower Accessibility. These random samples were obtained through random search engine resulting in PDF format, and are mostly provided by the companies themselves in their official website, which is the same as the paper they print for the public.

**Figure 43  Marking analysis - US01 vs. US11**
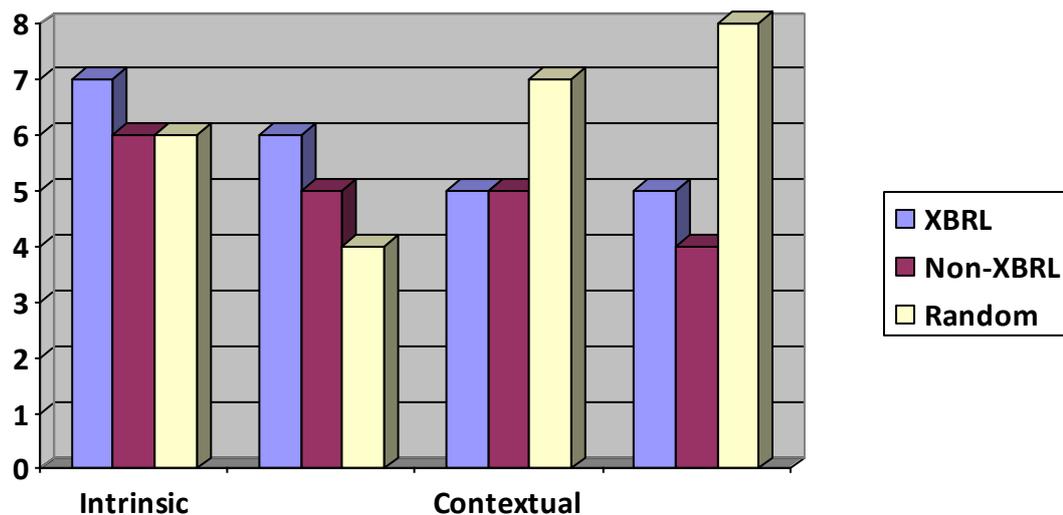


The reason for this result is possibly that the first group of non-XBRL formatted financial reports from the US EDGAR online system was

automatically generated from the XBRL formatted financial report. Both of these two types of reports contain a smaller amount of useful information, are less complete and have a lower level of interpretability compared with the traditional paper type of well-presented annual financial reports.

## US02 vs. US12, XBRL comparing with non-XBRL

However, the second group of financial reports from the US EDGAR online is significantly better than the first group in both XBRL and non-XBRL formatted financial reports. The contextual and representational features of these reports are of a much higher quality than the previous group. Still, the non-XBRL formatted financial reports have a lower quality in general than the XBRL formatted financial reports, with only contextual quality features being at a similar level.

**Figure 44  Marking analysis - US02 vs. US12**
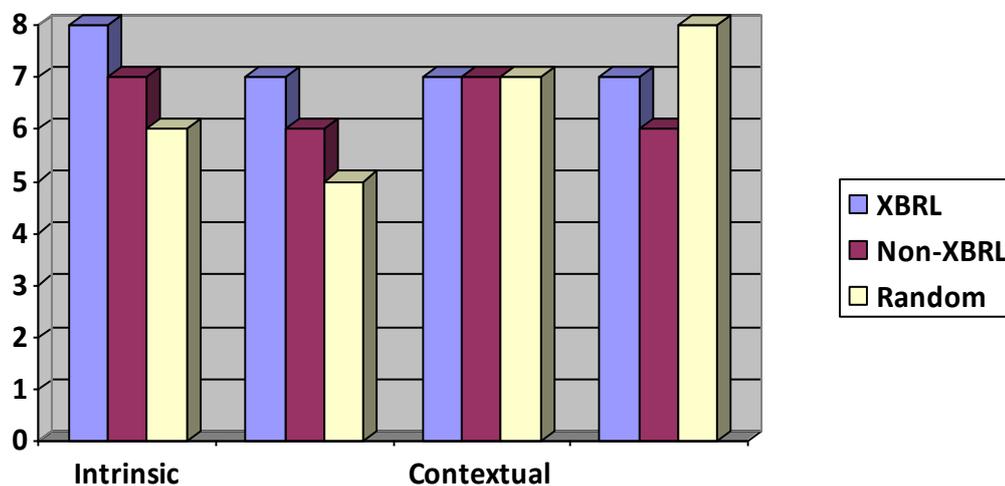


When including random financial report samples from other resources in the sample region, both the XBRL and non-XBRL formatted financial reports from the EDGAR online database have higher Intrinsic and Accessibility scores than those random samples, but are still lower in

presentational quality. Contextual qualities are almost on the same level for all three types of data. The average score for all the quality criteria of this group is around 6 to 7 in 10, which is much better than the first group of the US samples (Figure 44).

The result indicates that there is a clear link between non-XBRL and XBRL formatted financial reports collected in this period, i.e. it is very possible, using outsourcing, to translate non-XBRL formatted report. However, with the development of XBRL technology and application software, financial reports in XBRL have started to show advantage over non-XBRL formatted financial reports. The top three features of XBRL formatted financial reports showing higher quality than the non-XBRL formatted financial reports are Accuracy, Timeliness and Accessibility. In addition, the presentation features have been quickly improved in XBRL web applications. iMatrix software in the EDGAR online system can now present and compare different XBRL all formatted financial reports graphically, which will improve their Interpretability and ease of understanding.

### US01 vs. US02, XBRL comparing XBRL

When comparing the XBRL formatted financial report from different year groups with same resource, a substantial difference can be identified with respect to the level of quality represented. As shown in Figure 45, the first group of the US XBRL financial reports had poor contextual and representational quality, and there were a lot of numeric errors in the data which contradicts the benefits that XBRL advertised internationally. However, after two years, with the development of XBRL taxonomy, Dragon Tag and iMatrix XBRL application software, these weaknesses

have been solved and transformed into a strong point of XBRL formatted financial reports.

The reasons why the first group of XBRL formatted financial reports represent a poor quality are likely to be: 1. XBRL taxonomy and related XBRL application software are still under developed; 2. The first group of XBRL filing is voluntary, which did not oblige companies to file serious reports with enough content and corrections; 3. Most XBRL financial reports from the first group are directly mapped from previous non-XBRL formatted groups, then pdf formatted reports are reproduced from these XBRL reports which caused a poor content in the amount of information included and the veracity of numeric data. In contrast, the second group of XBRL formatted financial reports have all been seriously validated by XBRL numeric logic software to ensure that the data is correct. In addition, the convenient web iMatrix financial analysis software has definitely improved the quality of XBRL formatted data, both in terms of usability and presentation (including aspects such as ease of understanding and concise representation).

**Figure 45  Marking analysis - US01 vs. US02**
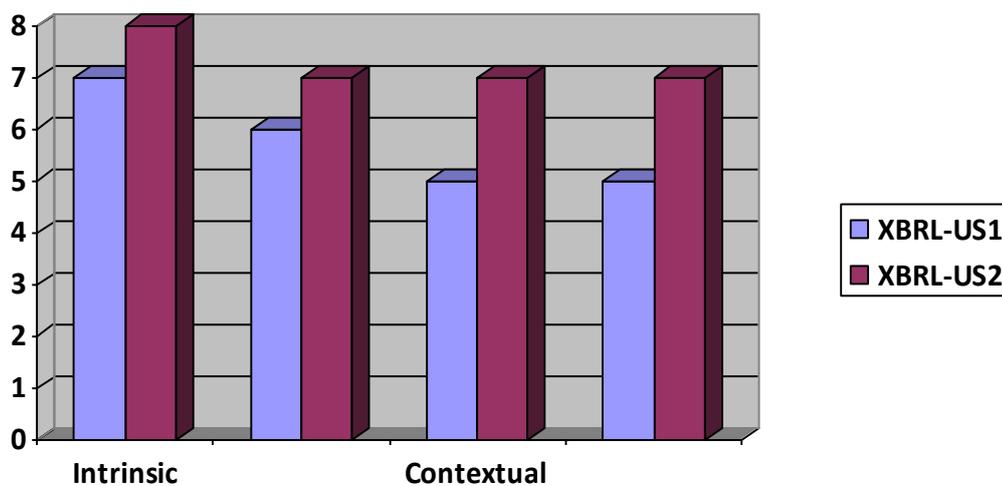
## CN01 vs. CN11, XBRL comparing non-XBRL

The first group of XBRL formatted financial reports from the Shanghai
Stock Exchange system have also been pooled . Being that there were only
raw XML files available on the Shanghai Stock Exchange website, pdf
formatted non-XBRL financial reports can be found on China's Shenzhen
Stock Exchange system instead.

When comparing XBRL and non-XBRL financial reports for the year 2005,
the XBRL formatted reports appeared to have considerably lower quality
than those non-XBRL formatted reports in contextual and representation
terms. Figure 46 shows that the average score of XBRL reports is only
around 4 out of 10, whereas the average score for non-XBRL reports is
around 6 out of 10. The score of random selected data reflects a similar
level of quality except with slightly lower accessibility, but it shows
slightly higher representational quality.

**Figure 46  Marking analysis - CN01 vs. CN11**
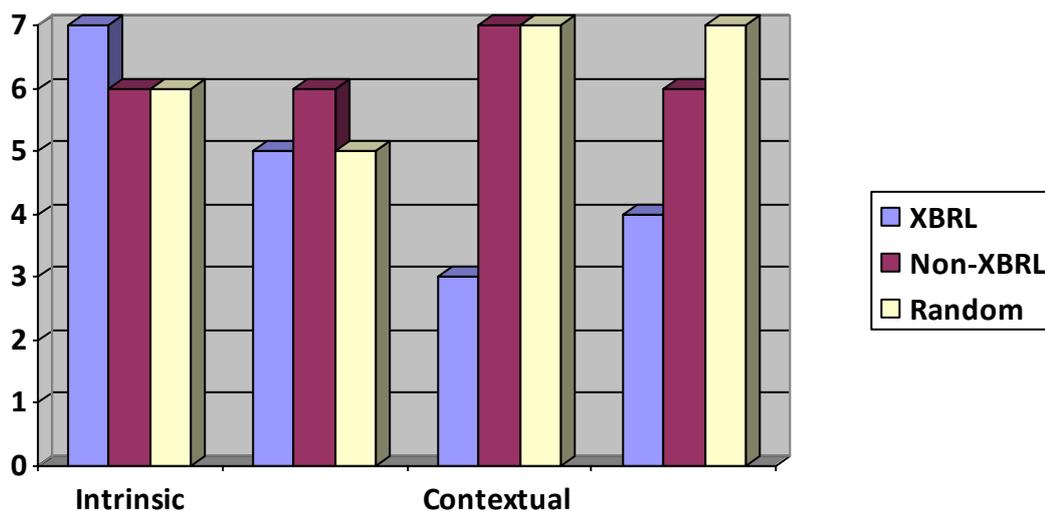


Moreover, comparing the quality scores in detail, we see that this group of

XBRL formatted financial reports has extremely low security and extremely poor Interpretability. The main reasons for this is could be:

1. This group of XBRL data was simply mapped directly from current financial reports when the Chinese Taxonomy was not ready and XBRL mapping software was still under development;

2. The company who did these mapping only included very limited amounts of information from the original reports for ease of operation;

3. No XBRL web integrated presentational software is available at that moment, which has resulted in these huge amounts of data not being used, but merely being present as a raw display on the public website.

## *CN02 vs. CN12, XBRL comparing non-XBRL*

Similar to the second group of US XBRL formatted financial reports, the quality of the second group of XBRL data in the Shanghai Exchange system has also been greatly improved. After a two-year period of delaying development, the Shanghai Stock Exchange System finally developed a new XBRL application interface for all their financial report filings.

**Figure 47 Marking analysis - CN02 vs. CN12**
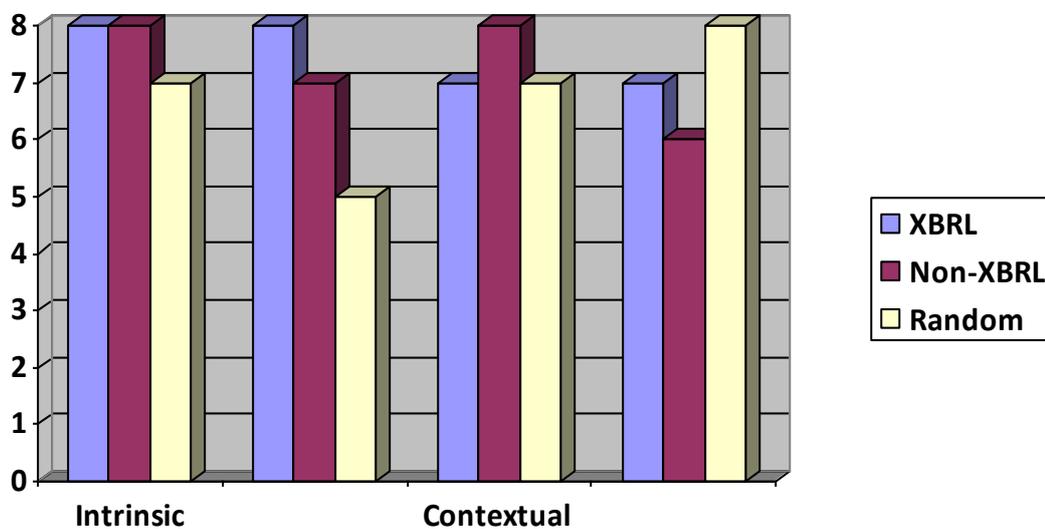
From Figure 47, the XBRL formatted financial reports show very high quality in their Intrinsic and Accessibility features, although contextually slightly lower than the non-XBRL formatted reports and slightly higher in terms of representation. The overall score of XBRL reports is around 7-8 out of 10, whereas the non-XBRL reports is around 7 out 10; that is, have only small differences. However, the score of random samples has much lower accessibility than XBRL reports and non-XBRL reports from the same source, with presentation features still the highest in all three types of reports.

Comparing detailed scoring, the XBRL and non-XBRL reports in this group have added a huge amount of useful information, almost equal to the random samples. On the other hand, random samples have a lower score in terms of accuracy and believability than the other two types of reports. The biggest disadvantage for the random samples is that they are not as easy to access as the XBRL data, which is all directly available and searchable on the Shanghai Stock Exchange website.

The main reason for this change is largely that of the advances in XBRL taxonomy and development of XBRL web interface applications. However, those XBRL formatted financial reports are still generated from traditional pdf reports. The XBRL format has improved data accessibility and representational features. However, that data still relies on the non-XBRL formatted data, instead of being created in XBRL format from the beginning, which can only increase the accountant's work load. One positive aspect of this group of XBRL financial reports in the Shanghai Stock Exchange system is that they include descriptive information which are categorised inside the XBRL report. The new web preventative application has made those more convenient for viewing and comparison.

Adding analysis tools on the web page has improved the usability of these data and provided a better XBRL user experiences.

*CN01 vs. CN02, XBRL comparing XBRL*

Making a comparison with XBRL formatted financial reports from Shanghai Stock Exchange system of different periods, it is to be acknowledged that the Accessibility, Contextual and Representational quality features have all been greatly improved in the latter group of XBRL formatted reports. The average quality score of the first group of XBRL reports is four out of ten, whereas the average quality score of the second group of CN XBRL reports is around six to seven out of ten. The CN01 group XBRL data is weak in its Contextual and Presentational aspect, while in comparison the CN02 group XBRL data show good quality in almost all aspects (Figure 48).

**Figure 48 Marking analysis - CN01vs CN02**
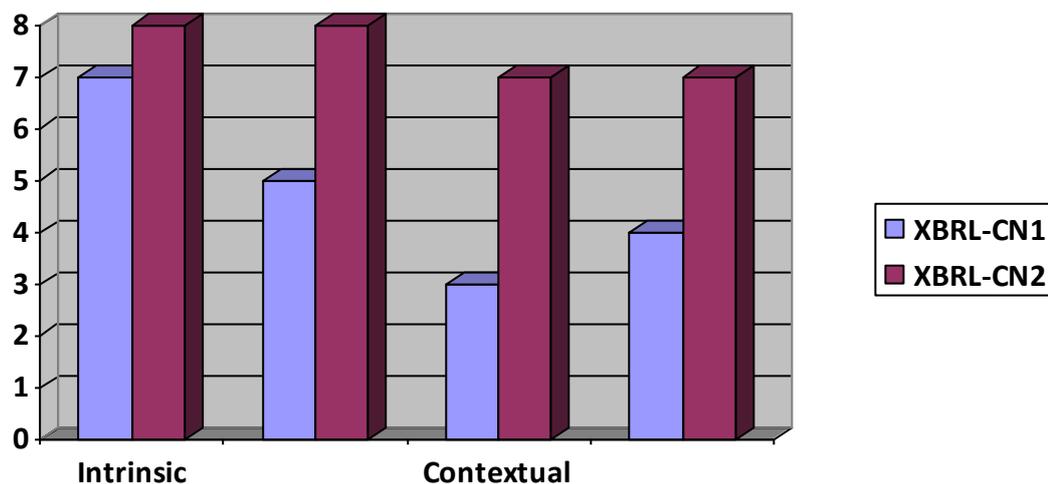


In terms of more detailed quality scores, the CN02 XBRL data improves the accessibility score in terms of security and the contextual score in terms of complete, value-added data and the amount of information. In addition,

the presentational features improved significantly because of better interpretability.

The main reason for this improvement was the much improved web interface system. To be precise, the first group of XBRL financial reports was only a display on the official website system, one without actual usability. The second group of XBRL really does advantage of what XBRL can offer. With integrated web financial data management, presentation and analysis software, the quality of these financial reports as well as the usability of these financial reports have been greatly improved. Again, it indicates that the improvement of the quality of XBRL financial reports relies deeply on the development of XBRL taxonomy and XBRL application software.

### *KR01 vs. KR11, XBRL comparing non-XBRL*
South Korea has only one official XBRL data system, so the comparison is much more straightforward. The XBRL formatted financial reports collected from DART database have shown better quality in their Intrinsic and Accessibility features. When adding the scoring of random South Korean non-XBRL financial reports, the XBRL formatted reports show a similar level of good quality in contextual and Intrinsic features, still weaker in presentation but much stronger in accessibility (Figure 49).

In terms of detailed quality scoring, the non-XBRL financial reports are weak in intrinsic features mainly because of their lower believability and objectivity. The general accessibility scores of non-XBRL reports are commonly low in security as well as detailed accessibility. Nevertheless, the non-XBRL financial reports are still slightly better than XBRL

formatted reports in Contextual in terms of their completeness and the amount of data.

**Figure 49 Marking analysis - KR01vs. KR11**
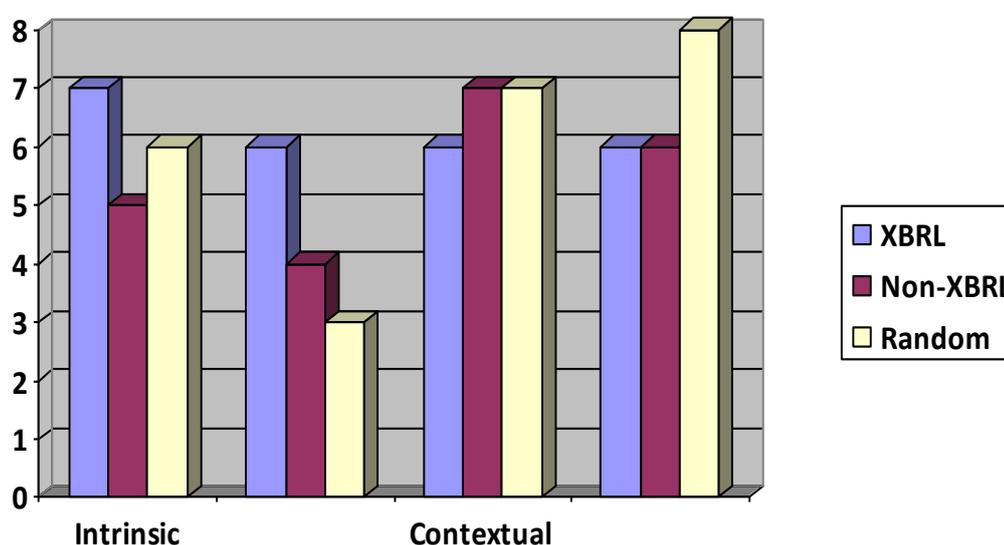


In all, the quality of South Korean's XBRL and non-XBRL are much more consistent than the US and China, especially on the XBRL side. This may be due to the Koreans having developed a good website XBRL management system from the beginning (although later than the US and China), and using a mixed approach to filing these financial reports. However, the disadvantage of Korean financial report filing is that they are lagging behind the development of XBRL, compared with the US and China. In terms of improvement, the general quality score of Korean XBRL formatted reports of 2009 was much better than the reports of 2007.

## 4.2.1 Problems of preparing XBRL FR using out-sourcing

From the results above, it can be deduced that when companies use out-sourcing to produce XBRL formatted financial reports, major issues arise regarding the assessment. First of all, when the XBRL formatted financial reports are produced from having been out-sourced by the same companies, the amount of information available in XBRL formatted financial reports

will certainly be less than the original non-XBRL formatted financial report. Therefore, the quality of XBRL formatted financial report from out-sourcing will generally be decreased, except for accessibility and reusability. Yet, comparing different types of financial report from the same source with the same data does give a compatible base for this comparison.

On the other side, the XBRL formatted financial report is designed to be capable of reproducing other non-XBRL formatted financial report automatically using software. Therefore, if the XBRL formatted financial reports were originally produced by Accounting Information System, the quality of non-XBRL formatted financial reports would certainly be lower than the original XBRL formatted financial reports. As a result, the markings for different types of financial reports from the same source is not valid. However, this is less likely to be the case in the study, because being that XBRL is still in its early adoption stage, very few companies are fully equipped with XBRL based Accounting Information System.

As a result, the selection of XBRL and non-XBRL formatted financial reports for comparison is difficult. Using samples from the same data source produces more comparable results. However, using samples from different data source produces more objective results. The out-sourcing of XBRL formatted financial reports is only a temporary stage for cooperate financial reporting. The stakeholders, especially internal financial information users, will not enjoy the actual benefits of XBRL while using out-sourcing.

### *4.2.2 Different adoption approach*

Besides out-sourcing, companies should consider other approaches to adoption; for example, XBRL formatted financial reports can be produced as part of the process of producing non-XBRL formatted financial report by accountants inside the company. Alternatively, as mentioned above, the company can fully integrate the XBRL based accounting information system, so that most financial reporting data will be originally and automatically produced by the software within the cooperation.

The first option is more convenient and feasible, However, this would require the company to hire accountants with XBRL FR preparation knowledge and skills, or spend a huge amount on training for current accountants. The other choice, however, is even more costly, because the company needs to replace all the current accounting information system with the XBRL based system, which also requires re-training most of the current staff. The development of XBRL based application software makes both of these two options became cheaper and adoptable. The firm would therefore enjoy more benefits provided by the XBRL applications. The quality of financial reports produced by these firms would then improve.

## 4.3 Thesis Study Results

This section compares the markings of the 500 new samples collected from trained participants. The financial report samples used in thesis study are collected from the same source as XBRL FR, or from other random sources.

Figure 50 presents all the markings of all initial non-XBRL formatted financial reports collected from the same source as XBRL formatted financial reports (US01 US02, CN02) and other random sources (CN01,

KR), while Figure 51 presents all the markings of updated non-XBRL formatted financial reports from the participants.

**Figure 50 Marking analysis, non-XBRL, Single**
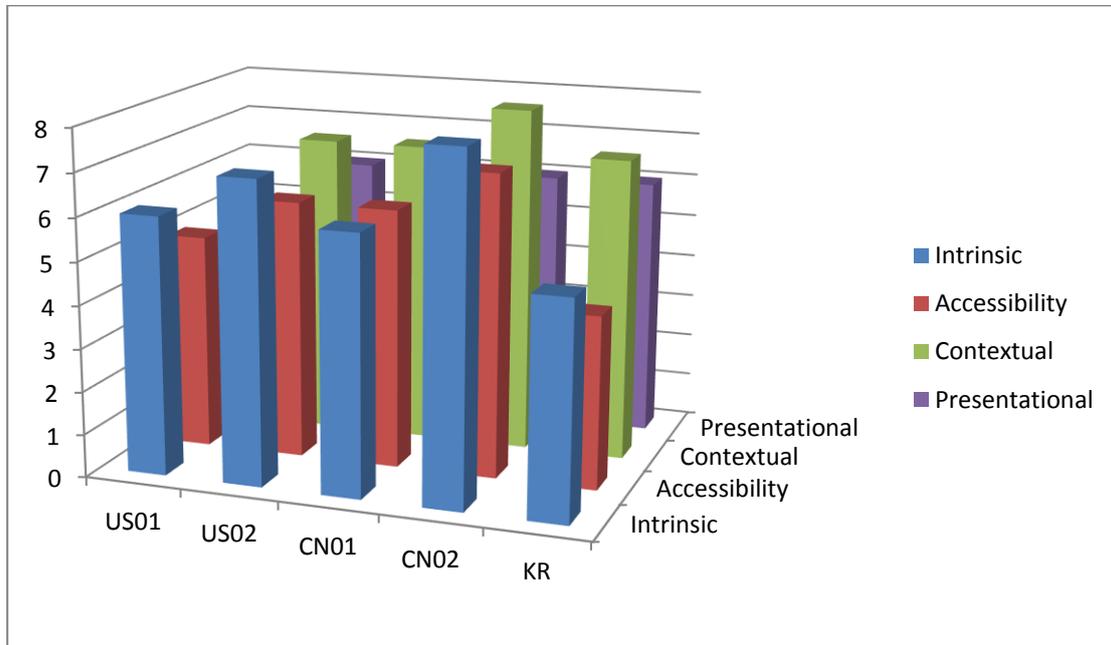


**Figure 51 Marking analysis, non-XBRL, Participants**
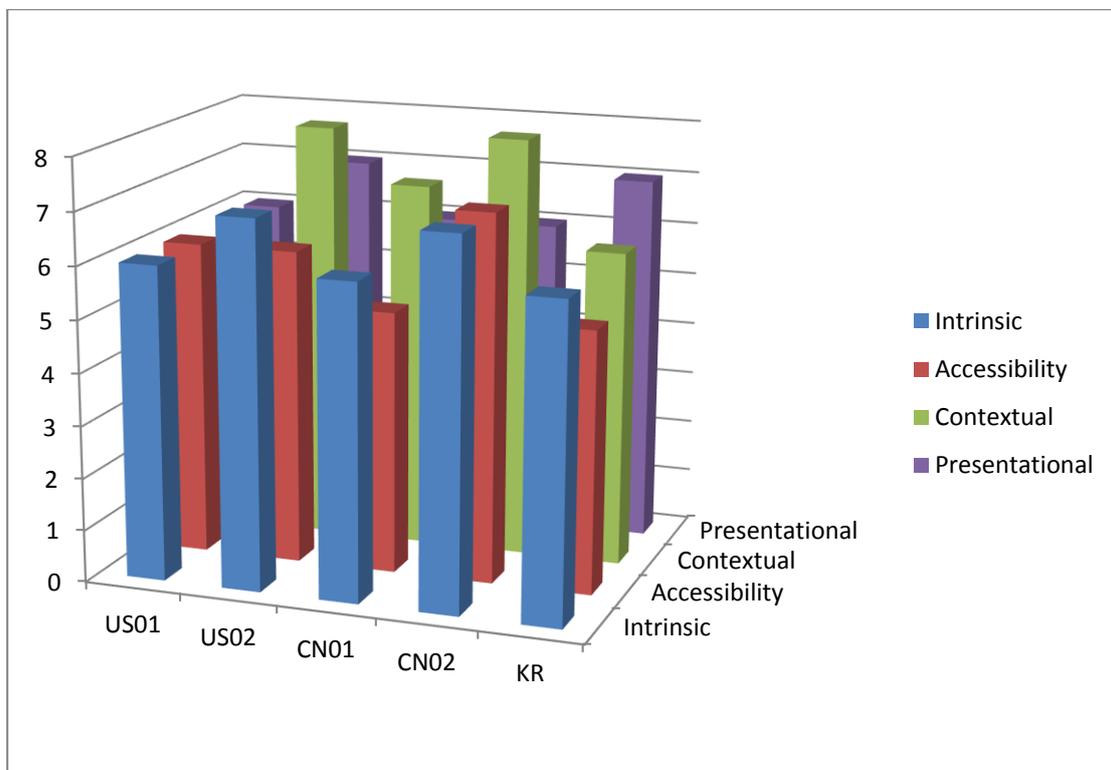


Comparing the two sets of marking data, the standard deviation of each detailed quality criteria in random sources is much higher than those which

were later collected from the participants. However, the overall score of both sets for each general criteria is similar, except for accessibility in CN01 group, and the intrinsic and accessibility scores of KR group. The differences are most likely to be caused by the consistency of financial report resources. Financial reports from PI-navigator are much more consistent than those collected from the participants. The financial reports from South Korean in PI-navigator also have a much higher quality than those on the DART database. This confirms that the Korean financial reports are very likely to be translated directly from the XBRL formatted financial reports, without additional text information in the Korean language.

Figure 52 shows the comparison, using a general quality criteria, of total marking scores of non-XBRL formatted financial reports from participants with markings from participants. Figure 53 demonstrates the differences between total scores of non-XBRL formatted financial reports from PI-navigator with markings of participants, by region. From these two figures, it can be observed that the total markings from PI-navigator are close to the markings from participants, except in terms of the presentational quality and for the US financial reports in the first adoption period.

**Figure 52 Marking analysis –General - Single vs. Participants**
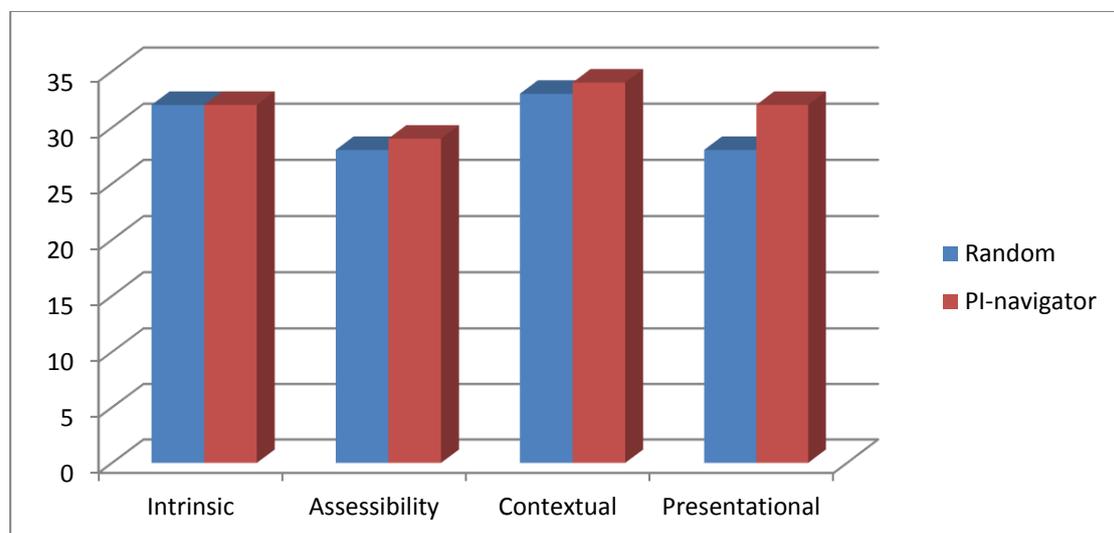
The presentational quality of financial reports from PI-navigator is slightly higher than those financial reports collected randomly. Regarding the impact of this difference on the analysis of XBRL formatted and non-XBRL formatted financial reports, this finding further confirms that the presentational quality of non-XBRL formatted financial reports is higher than that of the XBRL formatted financial reports in the first adoption period. At the same time, the overall quality of non-XBRL formatted financial reports from the PI-navigator is slightly higher than those collect from participants and EDGAR Online. This is likely to be caused by the additional graphic presentation and data added in these financial reports on the PI-navigator database. Moreover, this will not have a great impact on the analysis that was carried out in regard to the comparison between the XBRL and non-XBRL formatted financial reports from random sources.

**Figure 53 Marking analysis - Regional - Single vs. Participants**
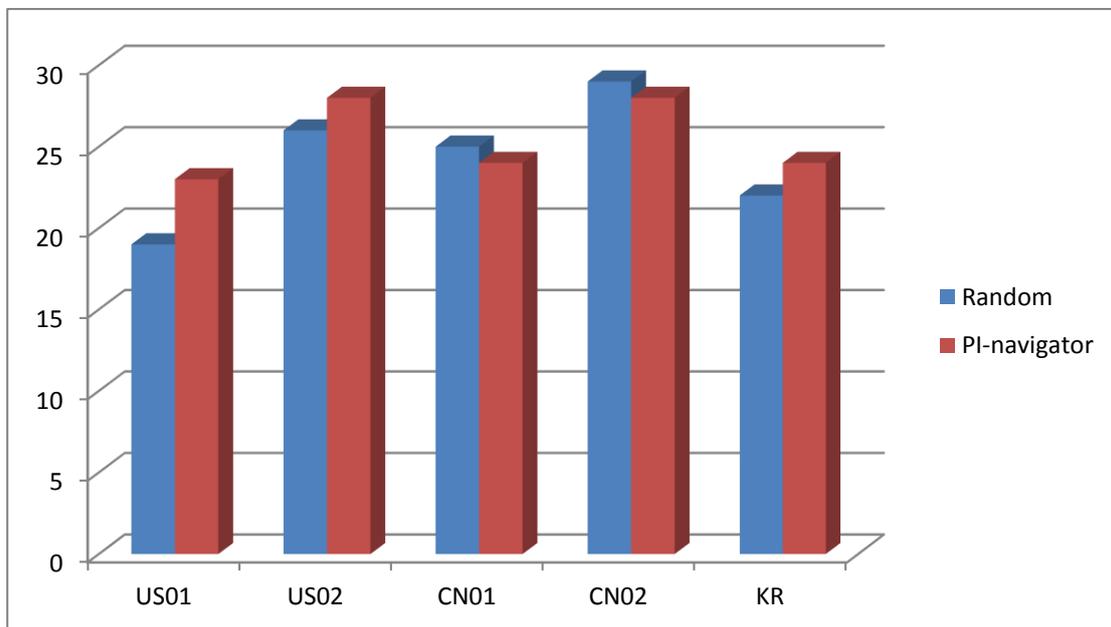


## 4.3.1 Knowledge

Following an introduction, but prior to the marking of financial reports, modest levels of declarative and procedural knowledge of both financial

statement analysis and general accounting knowledge were transmitted. A post-marking was conducted after training (the timing of which varied between participants) with a second post-test following the second round of financial statement analysis. For the training to be effective, the level of procedural knowledge would have to increase after the training. Declarative knowledge should not significantly increase. Most participants are familiar with accounting but are very new to XBRL. Only a few of them have heard a little about XBRL, either in the accounting information system class or from the stock exchange website. During the process, it was observed that there are two general misunderstanding about XBRL: 1. many of them thought XBRL was a software program; 2. Right after introducing XBRL as a digital format, a lot of participants thought that XBRL does not change the content of financial reports and therefore, it would not affect the quality of financial reports.

### 4.3.2 Quality index system marking training

Training in how to mark financial reports was different from inducting the research participants about XBRL and theories of where it can be applied. In this training course, the marking method of previous single marker style was adopted; that of training in general scoring, individual notes deduction and double checking.

The marking process should firstly involve reading thoroughly the evaluated financial report first, then giving a general quality score (e.g. Mark 8). Secondly, during the process of detailed reading, issue notes are taken which are mostly negative, and these will have a negative influence by the end stage of detailed marking (eg. Mark 6 in contextual quality if the amount of data available is very limited). Finally, when time and the internet is available, the marking can go to the official website of the

investigated company or search engine to double check with the issues noted. If new problems were found, for example the inconsistent numbers between the official website and the financial reports, then the quality score of related section should be corrected.

### 4.3.3 Accuracy

During this thesis study, one of the biggest problems found when marking were the significant errors and nonstandard format in the first group of XBRL formatted financial reports from the US and China. The errors were generally expected in almost each filing of the XBRL formatted financial report in the US voluntary programme. However, the Shanghai Stock Exchange system provided a huge amount of unusable XBRL formatted financial reports. For example, the non-XBRL formatted financial reports of the same company in Shanghai Stock Exchange system would have a complete book of financial reports with over thirty colourfully decorated pages, whereas information transferred to the XBRL formatted financial report can be condensed into less than one single page. However, the quality XBRL formatted financial reports from the second stage of XBRL adoption have been significantly improved, indicating that proper usage of XBRL format can improve the quality of financial reports. For example, 100% of companies using CLARITY FSR(TM) for their SEC XBRL submission successfully file without any EDGAR XBRL validation errors. Moreover, the Shanghai Stock Exchange system has launched another group of web-integrated XBRL formatted financial reports, and their on-web application has become a handy tool for investors.

### 4.3.4 Effort

Participants in both conditions should expend less effort in completing the task after receiving procedural knowledge training. A significant effect on

the conditions of effort was also expected. Participants using XBRL technology should require less effort than those using PDF. There is also a significant interaction involved in the timing of training. Participants who received training prior to round one experienced greater decreases in effort in the second round (as compared to the first round) than those who received training after the first round of analysis. Therefore, information users who receive good training on how to use XBRL and then have more practice, can greatly decrease the effort of both search and utilisation of XBRL formatted financial reports. With the development of intelligent XBRL application software, even non-professional investors can quickly find the useful information they need and make better decisions than if they were using previous non-XBRL formatted financial reports.

### 4.3.5 Efficiency

While making less effort, participants also discovered that participants using XBRL technology were no more accurate in the same amount of time than those using PDF technology. However, those using XBRL technology achieved similar levels of accuracy when using significantly less data. Those using the technology who had low knowledge outperformed those with higher knowledge levels who did not use the technology. XBRL can indeed improve the efficiency of information users, especially trained analysts and accountants.

## 4.4 Improved accessibility and doubtful accuracy

The accessibility of XBRL formatted financial reports has certainly improved more than that of previously non-XBRL formatted financial reports (including downloadable Excel files and PDF). However, accuracy issues especially, in the first adoption period of all regions, cast doubt on this progress. The results of the separate scoring and the comparison of

XBRL financial reports against non-XBRL financial reports were then put together. Suggestions were then made of how to make the most of the beneftis of XBRL in financial reporting while continuing the best aspects of non-XBRL financial reporting in the adoption process. In the end, the quality of accountants' work affected by XBRL would be analysed over the technology adoption periods.

All the data scoring together showed a fast increasing trend in the improvement of financial reports quality. Although XBRL formatted financial data did not show much advantage at the beginning of the process, XBRL financial reporting soon displayed large improvements in the quality of financial reports in almost all aspects. In view of the later XBRL web data management, presentation and analysis applications, XBRL formatted financial reports have much better accessibility and are more accurate, save time and maintain a more consistent format (Figure 54).

**Figure 54 Marking analysis - a relative comparison**
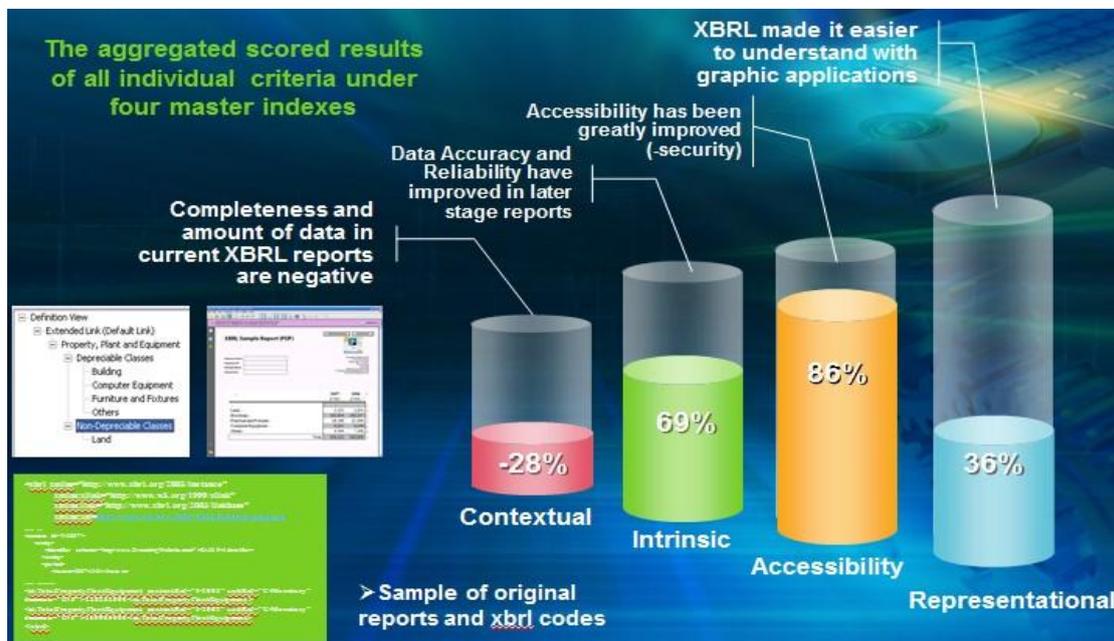


There is still a big margin in quality potential that XBRL can improve on. We have already been shown a glimpse of the digital format of financial data. With future XBRL data management and analysis end user software,

the quality and usability of financial statements would be much improved. The quality of accountants' work would also be significantly improved.

However, the impact of XBRL on the quality of accountants' work still largely depends on the development of XBRL taxonomy and XBRL application software. Better XBRL taxonomy creates a better quality of XBRL financial reports. With taxonomy being more internationalised with the IFRS, financial reports from different countries can also be made more compatible.

Nonetheless, XBRL also has disadvantages which might affect the quality of accountants' work in different ways. First of all, in order to be able to produce XBRL formatted reports and take advantage of XBRL computer applications, accountants have to learn much more about both IT technology as well as XBRL taxonomy. Secondly, XBRL is an open standard based on previous XML and this improves the computer's interpretability of the financial data, but at the risk of major security issues. Thirdly, a more generalised XBRL taxonomy may increase the compatibility of financial reports, but would also make it difficult for individual accountants to apply these standards to the specific situation of individual companies (although allowing individual companies to be able to extend their taxonomy in certain level might improve the situation although this might create other issues in data management). Last but not least, XBRL is still only a tag added way to recognise the financial data in a computer system, but not a complete solution for utilising all the information that financial reports could provide. Unavoidably, this approach would leave accountants doing less of the job themselves, so limiting the ability of accountants to manipulate and interpret the financial data, which may not necessarily be a disadvantage. In all, XBRL would be

expected to improve in many ways the quality of current non-XBRL formatted financial reports and the quality of accountants' work.

From an examination of the current XBRL adoption situation and the application of XBRL formatted financial reporting in typical countries discussed above, we could conclude that the changes in the quality of accountants' work look to be very dramatic in the years to come, particularly with regard to the adoption stage of XBRL in the financial reporting system of different countries.

In the early stage, from the beginning of the first XBRL filing until now, both XBRL formatted and non-XBRL formatted financial reports co-existed in the financial reporting system. Even to this day, XBRL formatted financial reports are still playing a supplementary role in financial reporting. For the moment, the quality of XBRL financial reports won't greatly exceed non-XBRL financial reports.

In the second XBRL adoption stage, when XBRL taxonomy and application software are well developed, XBRL formatted financial reports will play a major role in the financial reporting system, with non-XBRL reports existing as a format of XBRL data presentation. The quality of financial reports in XBRL would then display significant advantages in terms of accessibility, timeliness, accuracy and usability. Continuous or live time financial reporting may start to appear into practice.

Finally, once XBRL has become a common standards and XBRL application hardware, data management software and analysis software are all well developed and well equipped in most offices, the quality of accountants' work will show a great improvement in almost all aspects.

With the data management and financial report production being for the most part automatically performed by computer with XBRL software applications, accountants could then focus more on financial data analysis, instead of data processing.

The next chapter will start to look for more evidence of these findings from accountants who are currently using or have used XBRL. It is important to know how these experienced accountants think that XBRL has affected their work and the quality of financial reports they produced, and then compare their opinions with the quantitative model analysis.

# CHAPTER 5

# FIELD STUDY RESULTS

## 5.1 Opinions about XBRL from professional accountants

The primary objective for this chapter would be conducting questionnaires, assisted with telephone and face-to-face interviews, with professional accountants who have already used XBRL (Figure 55). A few researchers have already conducted surveys regarding XBRL (Pinsker 2003; Henson 2010). However, most of those surveys were not sent to those people who have good knowledge about XBRL, nor to the professions relevant to the subject (e.g. even the CFA institute XBRL survey was aimed at gauging awareness in the people who plan to use XBRL, 2007 & 2009).

**Figure 55 Survey design mind map**
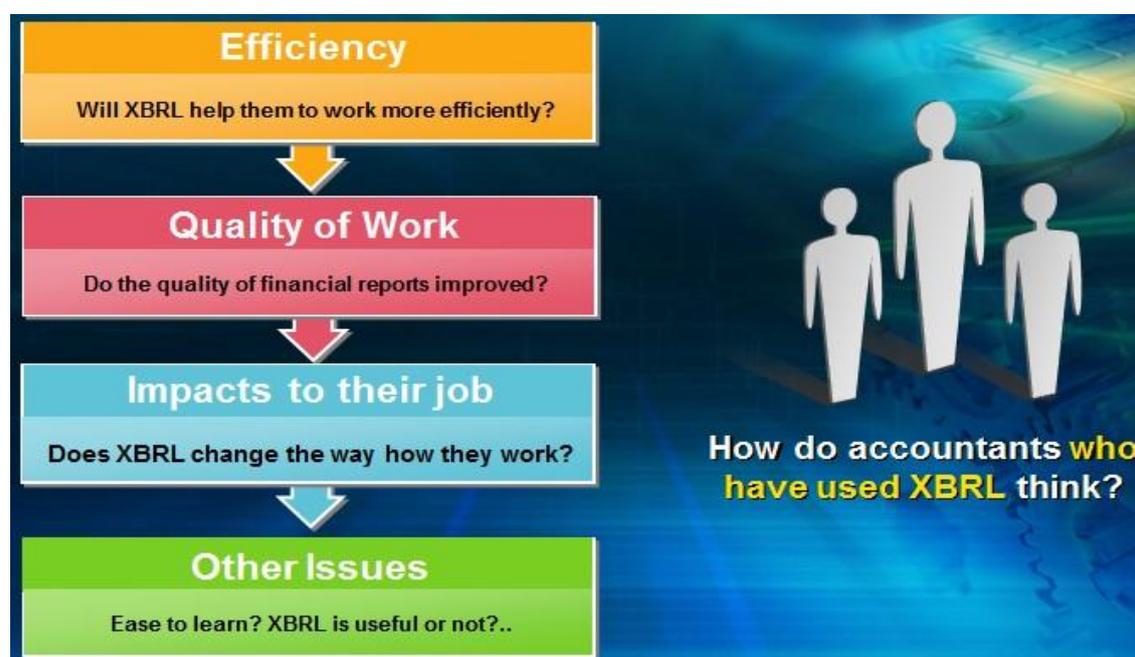


The questions in the survey were mainly related to the impact of XBRL on the accounting profession and more specifically on financial reporting. Professional accountants were asked about when and how they started to be aware of XBRL; how they were using XBRL applications and creating

XBRL formatted financial reports; and how they felt about the use of XBRL formatted information compared with the non-XBRL formatted financial reports that they produced before. In addition, respondents were asked questions regarding the changes that XBRL has brought to their work and to their financial reporting experiences, in both questionnaire format and a general text box. Moreover, additional telephone and face-to-face interviews were conducted to investigate the topic in more detail.

**Figure 56 Survey distribution and response**



Figure 56 demonstrates the original survey distribution and early response, before additional interviews were conducted in the UK. The respondent pool is generally generated from the contact lists of XBRL formatted reports from the US EDGAR Online and Chinese Shanghai Stock Exchange system. A website based questionnaire email with a link direct to the research website, or a PDF formatted form questionnaire as attachment, was sent to those contacts abstracted from the 500 XBRL formatted financial reports which were used in previous chapter. The feedback results of respondents were collected and confirmed with a random check of those who did not reply, via additional emails and phone calls.

Due to a different XBRL route in China and the corresponding availability of resources, face-to-face interviews were conducted by researchers who were actively involved in the XBRL adoption process of the Shanghai Stock Exchange system. Almost all Chinese companies were using outsourcing companies to produce XBRL formatted financial reports. Therefore, very few accountants had actually experienced using XBRL creation and other XBRL application software in their work.

Although the results from the US and China are of different formats, the respondents were both asked the same group of questions. This is because both the US EDGAR Online system and China Shanghai Stock Exchange system use external XBRL file translate services companies to ensure the successful transition from non-XBRL financial reports to XBRL financial reports. More details will be discussed in the following sections.

### 5.1.1 Misunderstanding XBRL as a software

Similar to the findings from the participants in this thesis study, many interviewees who did not have much knowledge about XBRL misunderstood XBRL as an accounting software. With the later mandatory use of iXBRL in the UK, some of the participants are still seeing XBRL as an on-web application, rather than a language or a format. This is possibly caused by a great many authors who promote XBRL in different publications, claiming that XBRL can perform many previous impossible works, such as real-time financial reporting and real-time auditing. The public therefore view it as a tool rather than a critical material to build the tools. In addition, many pioneer authors who have written about XBRL are mostly experts in accounting, but very weak in computer science. As a result, XBRL has been interpreted incorrectly in many cases.

### 5.1.2 The general expected improvement on the quality of XBRL FR

Partly because of the over-stated promotion of XBRL by the public, most interviewees had a very high expectation of XBRL formatted financial reporting. They viewed it as an evolutionary technology, which has already been mandated and will soon showing its benefits in improving the quality of financial reports. For the investors, XBRL formatted financial reports were more accessible on the regulator's website. In addition, the on-web XBRL application was believed to provide a fast search tool for collecting both vertical and horizontal data. However, due to the limit of current XBRL format, and the lacking of various XBRL software application, the amount of information presented in XBRL formatted financial report is not as abundant as previous non-XBRL formatted financial reports.

Moreover, the presentation style of XBRL formatted financial reports is not as colourful as in previous paper and PDF format. However, this does making financial reports from different companies more comparable. As a suggestion, XBRL formatted financial report should be internal automatically generated by the accounting information system, with the help of XBRL GL applications. While paralleled formats can be individually produced by enhancing XBRL generated files. In all, the general expected improvement on the quality of XBRL formatted financial reports has not yet shown up, especially in the accuracy quality aspect. Bigger improvements are still to be expected in the later stage of XBRL application.

### 5.1.3 How XBRL may affect the accounting profession

Surprisingly, many of the accountants interviewed said XBRL did not as yet have much impact on the accounting profession. Most companies are totally or partially outsourcing the generated XBRL formatted financial

reports from existing non-XBRL formatted financial reports. Many accountants, even those from top four accounting firm see XBRL as a new format of financial report, which is only used by a professional tagging accounting firm during filing. As for accountants who have actually prepared XBRL formatted financial reports, they are currently treating the tagging process as an additional procedure. For example, the accountants who work for Shanghai Stock Exchange are well prepared for listed companies being that they use an officially constituted simple type of tagging software to tag financial reports after non-XBRL formatted financial reports. The file is then integrated into the XBRL website database, so providing simple search service for investors.

However, more accountants from the US are either using iMatrix or dragon tag to prepare XBRL FR individually, while another big group simply tags an existing spreadsheet file inside Microsoft Excel as a plugin. This has been treated as a general process by more and more firms internally. While in the UK, iXBRL can be easily filed on the webpage – much like filling in a table on a website - which is fairly convenient.

In most respects, XBRL has not yet caused a great impact on the accounting profession. However, accountants are currently feeling pressure to demonstrate knowledge in XBRL and XBRL-based applications when they seek and start new employment. The need for XBRL knowledge and XBRL application skills in the recruitment of accountants, is similar to the office positions requiring typing skills. XBRL is expected to affect the accounting profession in a gradual manner but right across professional activities, including making the content of their more analytical than bookkeeping, while changing the work procedure, the tools and employment and career advancement prospects.

## 5.2 XBRL in practice

The manner in which XBRL will precisely impact upon the practice of the accounting profession is further explored by the questionnaire. The questionnaire was originally designed following the theory of self-administrated questionnaire design recommended by Jenkins and Dillman (1997), and later enhanced by Couper's concept of computer-assisted survey instruments (2008). Jenkins and Dillman (1997) suggest that all questions should be designed with graphic language, cognition and visual perception, and motivation in mind. Five principles are given, two regarding navigation guides and three regarding achieving good information organisation. Couper provides a great deal of good concepts and examples of how to utilise modern computer technology to enhance survey design, emphasising the importance of the usability of both interviewer-administrated and self-administrated survey instruments.

**Table 36 Questionnaire design**

| 1.1.Categorizing | 1.2. Specifying | 2. Pre-set Info | 3. Open Info |
|---|---|---|---|
| Accountants & FR Related Professions | Experienced XBRL | Work Efficiency | Like XBRL or Not |
| | | Quality of FR | |
| | Perception (non-exp.) | Perceptions of above | How to improve |
| Non-Accountant or FR related professions | Knew XBRL | User Point of View | Future Expectation |
| | Perception (no- knowledge) | Perceptions of above | |

The questionnaire was divided into three functional parts, and the respondents were guided into specified sections according to their profession and experiences with XBRL. Part One was designed to identify the appropriate type of respondents and lead them to five different sets of

sub-questions. The focus of the first two sets of questions was work efficiency and quality of financial report for XBRL experienced accountants (Table 36). Part Two consisted of fixed quantitative question sets about the actual opinion of participants the impact of XBRL either in terms of experience or perception. Part Three was made up of some extended qualitative questions. Respondents who did not have previous XBRL knowledge/experience, or worked in accountancy, were guided towards a different set of questions. These sets of questions were focused upon asking for perceptions of XBRL applications after providing a brief introduction of what XBRL is and what XBRL applications do.

In Part One, the main task was to identify the type of accountancy work the respondent does and how much experience they have in XBRL. The first few questions were of a yes/no type, in order to give the fastest access to the appropriate question set for each respondent. Figure 57 below shows the number of respondents received in each group from the US. More details concerning the responses from the second distribution are discussed in the next sections.

**Figure 57  Types of respondents in the survey, US**
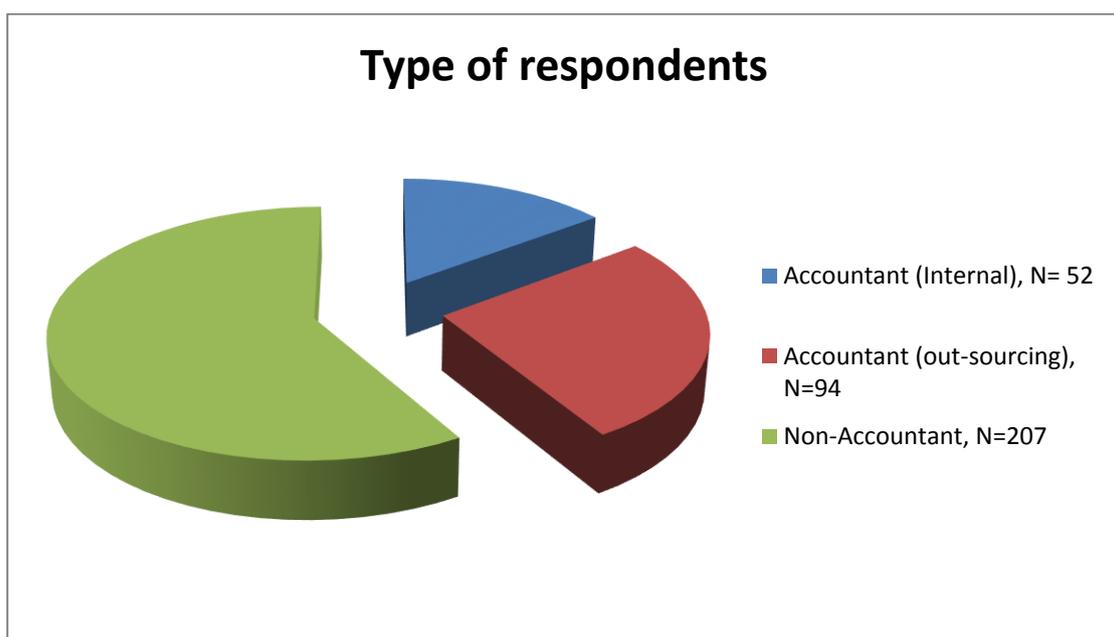
The second part of the questionnaire was the fixed question set which is similar to the statistic tables produced in the previous two chapters. All the questions in this section were formulated in an option of scoring from 0 to 10. Instead of asking dozens of repeated questions one by one, two clear tables were provided for the respondent to fill in where appropriate. Figure 58 shows the general responses to the second part of the questionnaire in the second distribution (mainly from the US).

**Figure 58  Responses to the second part of the questionnaire, US**
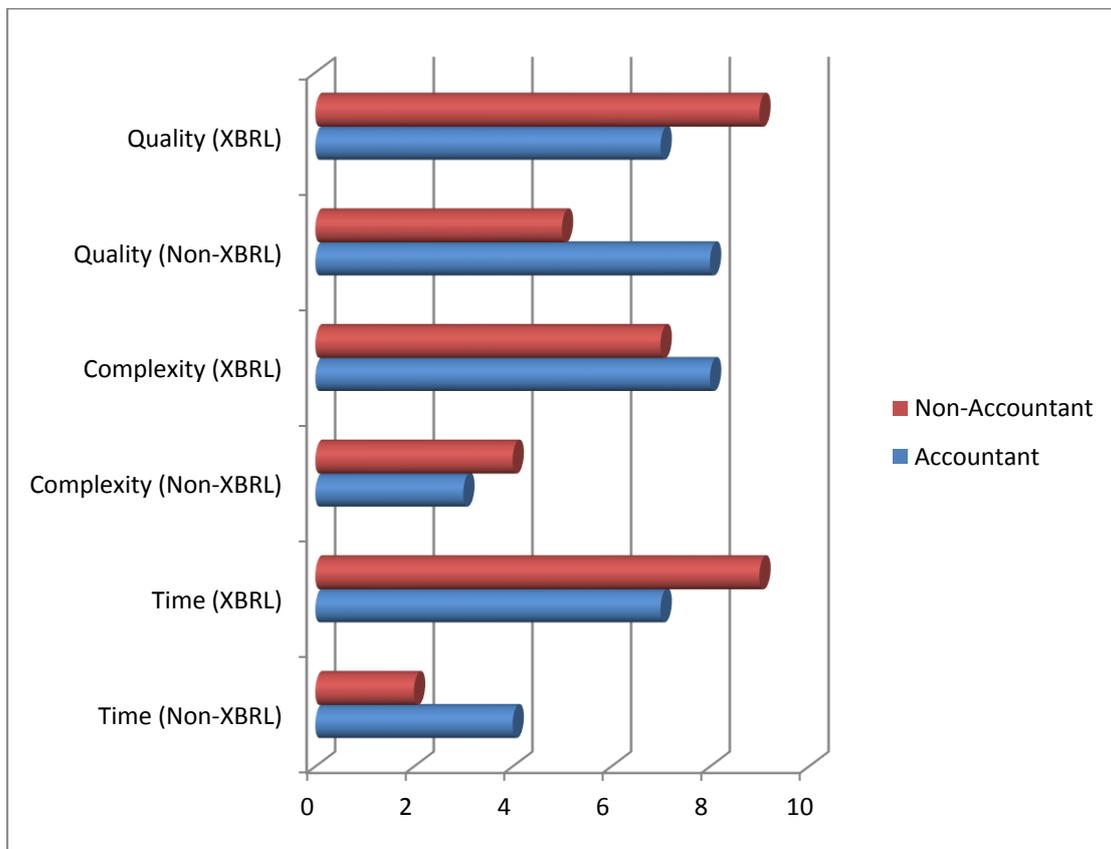


The third part was a qualitative question set which was designed to cover topics relating to the major research questions but not included in the main fixed question set. Most questions in this part were in an open format. Respondents were asked to write directly what they think or feel about the different impacts that XBRL has had upon them, and what they think can be done to overcome those negative impacts. For respondent who were not

accountants or did not have XBRL experience, they would mainly be asked about tendencies and ideas regarding the adoption of XBRL.

Figure 59 displays the general opinion of responses regarding other aspects of XBRL in the third part of the questionnaires. These opinions engage with issues of whether XBRL will assist continuous financial reporting, affect the working content and efficiency of financial reporting, facilitate continuous auditing, and determine changes in the procedures of all business operations. Overall, non-accountants or people who do not know much about XBRL have a much higher expectation of XBRL than those who have actually created financial reports in XBRL or used XBRL-related applications in their work.

**Figure 59: General opinion regarding other aspects of XBRL**
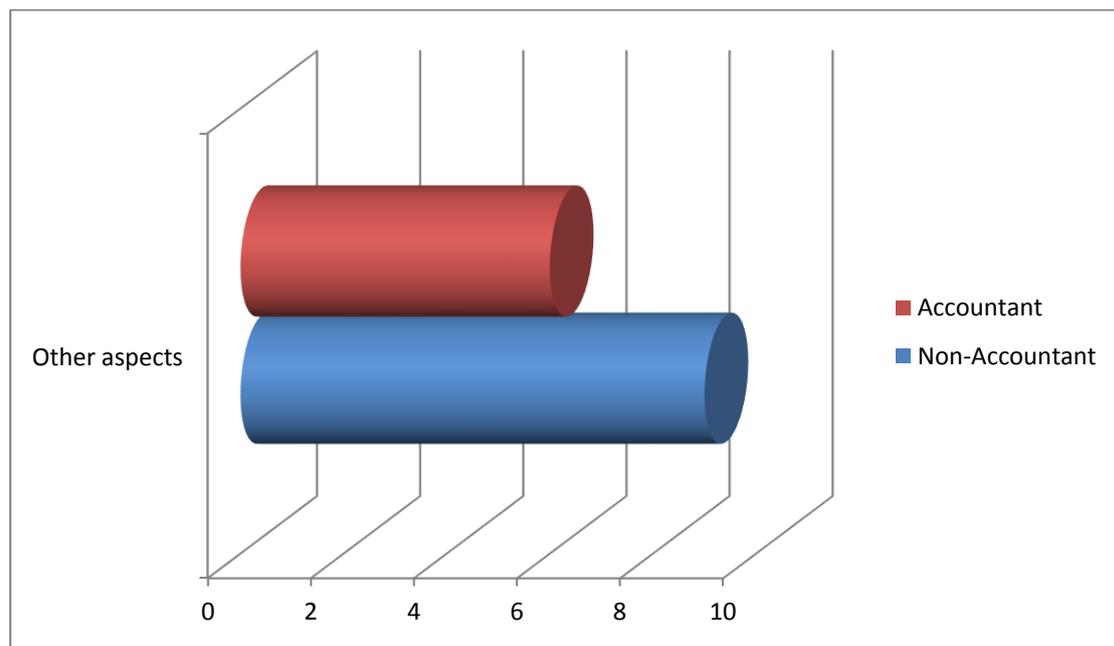


The full questionnaire is attached to Appendix A in three formats. The paper format is a raw format with all questions listed in one paper. All the types of respondents go through questions from the first to the end. The second format is PDF form. Respondent can fill in and reply in this PDF file, then click the 'send' button in the end of the page to send back the

questionnaire as an email to <u>questionnaire@xbrl.cn</u>. Both paper and PDF formats have two table formatted questions for the efficiency of accountant's work and the quality of financial reports produced in XBRL and non-XBRL (Appendix A). However, in the last distribution format – website (<u>http://xbrl.cn/questionnaire/group1</u>) - these two tables were broken down into 10 and 25 separated questions due to the restrictions on programming in data formation (mysql). Couper's computer-assisted instrument guidelines (2008) were used in the PDF and web formatted questionnaire. All three formats contain similar questions. However, the questionnaire built in the website is the most convenient format to collect and analyse data.

## 5.3 The impact of XBRL on the accounting profession

The impact of XBRL on the accounting profession can be concluded from the interviews. The discourse analytic method (Frohmann, 1994) was used to analyse the interview data. Instead of producing definitive versions of participants' actions or beliefs, the discourse analytic method uses interview data to reveal regular interpretative practices through which participants construct versions of actions, cognitive processes and other phenomena.

This method does not take the individual as the principal unit of analysis (Talja, 2002). It begins by analysing and counting the distribution of answers question by question. Some sections of the participants' discourse were selected as providing satisfactory answers to the questions, whereas other sections of the participants' discourse were to be ignored or treated as unimportant.

It is assumed that this procedure will result in a logical and coherent picture of the researched groups' actions or views, and can be generalised to

classes of social action and to whole groups of actors (Gilbert and Mulkay, 1984). The difficulty with taking a collection of similar statements produced by participants, as literally descriptive of social action, is the variability in participants' statements about a particular topic. Not only do different actors tell different stories, but over an entire interview, it is often exceedingly difficult to reconstruct or summarise the views of one participant, being that each actor has many different voices (Gilbert and Mulkay, 1984). In discourse analysis, inconsistencies in participants' accounts are interpreted as differences between, for the most part, internally consistent interpretative repertoires.

Two different approaches in the analysis of qualitative interview data have been distinguished by Alasuutari (1995) - the factist and specimen perspectives. In the factist perspective, the actual behaviour or attitudes of the participants are more important, and the reliability of research results depends on the extent to which the interview answers provide about the phenomenon studied provide unbiased and accurate information. However, in the specimen perspective, the research data does not in itself supply more authentic, unbiased, or accurate description of reality. All forms of talk and texts instead represent situated speech, providing evidence of the various ways in which a particular phenomenon can be approached.

The approach adopted for this research study utilised the specimen perspective of discourse analysis method. A thorough analysis of a few interviews (about ten interviews) was conducted, before the model of interpretative repertoires was abstracted and tested against a larger set of data (about fifty interviews). Questionnaires transmitted through email and website, telephone interviews and face-to-face interview data were all

combined to produce a more reliable result than that which would have been attained by analysing them separately.

## *5.3.1 Trends*

We obtained two different types of trends in regard to the questionnaire responses: the US region appeared to be very positive towards the impact of XBRL on the accounting profession, while the Chinese region appeared to be more detached regarding the topic. The first series of data collection focused on 100 test questionnaires sent to US accountants who filled the XBRL formatted financial reports in the EDGAR Online system. Pioneer data was enhanced with three face-to-face interviews with active participants in the Shanghai Stock Exchange system and XBRL adopters in China. From the first tide of research, it can be concluded that XBRL adoption in the US and in China has applied a very different route. Americans used a voluntary programme and open access to the EDGAR Online XBRL data. This enabled companies to become more involved with the XBRL formatted financial report data production process and gave them much more time to prepare for XBRL adoption before it became mandatory than was the case in China. Although both regions have widely utilised out-sourcing in the adoption process, China's stock exchange has completely utilised XBRL translation service for listed companies rather than asking them to produce XBRL formatted financial reports themselves.

As a result, the impact of XBRL upon the accounting profession was much greater in the US than in China. The research target was hence American accountants who had experience of producing XBRL formatted financial reports internally or had participated in the out-sourcing process. The

outcome of the questionnaire results from 2008 to 2009 was still based on an environment where XBRL was still in the development stage, while very few companies had adopted XBRL internally. Therefore, the second series of research was prepared with a stricter respondent type filter and the questions of inexperienced respondents with modified in relation to similar key questions but from the perspective of their perceptions.

**Table 37 Survey Result, First series of social responses**

| Topic | N= 27 respondents /100 distributions | |
|---|---|---|
| *Type of Profession* | *21 Accountants* | *6 non-accountants* |
| Level of XBRL knowledge | 4/10 | 2/10 |
| Level of XBRL Experience | 3/10 | 1/10 |
| Efficiency of accountancy work in XBRL | 4/10 | 8/10 |
| Quality of financial reports in XBRL | 3/10 | 9/10 |
| Impact of XBRL to other aspects of accountancy work | 4/10 | 8/10 |

*Score between 0 and 10, where 10 implies greatest level of knowledge, criteria or impact.

Table 37 lists all raw data collected in the first series of research through questionnaire and interviews (90 distributions for questionnaire, 10 distributions for telephone interview). Most contacts were sampled from the contacts provided in the XBRL formatted financial reports in EDGAR Online system. As a result, a good many respondents have participated in the US XBRL voluntary programme and had general knowledge of XBRL. The data type includes questionnaire and interview. The data collection region was mainly the US (80 questionnaires, 5 phone calls), while

randomly including China (10 questionnaires, 3 phone calls) and South Korea (10 questionnaires, 2 phone calls).

From the first series of survey response data, it was found that many companies were using out-sourcing instead of adopting XBRL internally. The level of XBRL knowledge of respondents was below standard level (5/10), especially for those who were not accountants. More interestingly, those who had experienced XBRL had a slightly negative point of view on the impact of XBRL.

**Table 38  Second series of social responses**

| Topic | N= 353 respondents /1000 distributions | |
|---|---|---|
| *Type of Profession* | *146 Accountants* | *207 non-accountants* |
| Level of XBRL knowledge | 5/10 | 3/10 |
| Type of XBRL adoption | 94 out-sourcing | N/A |
| Efficiency of accountancy work by time (non-XBRL) | 4/10 | 2/10 |
| Efficiency of accountancy work by time (XBRL) | 7/10 | 9/10 |
| Efficiency of accountancy work  by complexity (non-XBRL) | 3/10 | 4/10 |
| Efficiency of accountancy work  by complexity (XBRL) | 8/10 | 7/10 |
| Quality of financial reports (non-XBRL) | 8/10 | 5/10 |
| Quality of financial reports (XBRL) | 7/10 | 9/10 |
| Impact of XBRL to other aspects of accountancy work | 6/10 | 9/10 |

*Score between 0 and 10, where 10 implies the greatest level of knowledge, criteria or impact.

Therefore, the questionnaire design was modified before conducting a second series of data collection. The region of distribution has also been expanded to include Australia and Canada. In Table 38, it can clearly filter respondents who are not accountants or do not have much knowledge of XBRL, introduced a comparison between a non-XBRL and XBRL work environment, measuring efficiency in terms of time and complexity separately. 950 of these distributions were questionnaires, distributed to the US, the People's Republic of China and South Korea. The other 50 distributions were attempted phone calls, including 30 to the US, 10 to the People's Republic of China and 10 to South Korean. The distribution to South Korean was not as successful as to the other two regions, due to difficulties with the language.

The contacts of the second series of social response were mainly contacts from the US EDGAR Online system XBRL formatted financial reports (790 questionnaires), adding the  smaller number of distributions to China and South Korean, (80 questionnaires to each country). Due to a stronger respondent type filter and higher XBRL adoption level happening over time, respondents had a higher knowledge level than the first series and reached the expected standard (5/10). When inquiring about the efficiency of their accountancy work regarding time, they thought that the previous non-XBRL work environment was not quite as efficient as expected, while the adoption of XBRL would greatly reduce the amount of time for reproducing XBRL financial reports (4/10).

However, due to the existing XBRL adoption type (94/146 out-sourcing), the actual time accountants spend producing an XBRL formatted financial reports is longer than previous non-XBRL work procedure. Interviews in China confirmed that, for now, XBRL has a very limited impact on the

accounting profession because almost all the listed companies in Shanghai Stock Exchange system were using an external XBRL translation service in addition to previous non-XBRL filing. On the other hand, the quality of XBRL formatted financial reports compared with non-XBRL reports is shown to not yet offer many advantages in accuracy and usability, and to contain smaller amounts of information.

**Table 39  Third series of social responses, UK**

| Topic | N= 50 respondents | |
|---|---|---|
| *Type of Profession* | *41 Accountants* | *9 non-accountants* |
| Level of XBRL knowledge | 3/10 | 1/10 |
| Type of XBRL adoption | 39 out-sourcing | N/A |
| **Efficiency of accountancy work by time | 4/10 | 1/10 |
| **Efficiency of accountancy work  by complexity | 8/10 | 6/10 |
| **Quality of financial reports – Intrinsic | 6/10 | 7/10 |
| **Quality of financial reports - Accessibility | 7/10 | 9/10 |
| **Quality of financial reports - Contextual | 5/10 | 7/10 |
| **Quality of financial reports - Representational | 4/10 | 8/10 |
| Impact of XBRL to other aspects of accountancy work | 7/10 | 8/10 |

*Score between 0 and 10, where 10 implies the greatest level of knowledge, criteria or impact.
**these scores are comparative scores, with the non-XBRL given registering a base score of 5.

The main reason for this conflict is the slower development of XBRL report creation tools. Current software (Dragon and iMatrix) is still for the most part manually controlled, while their user interfaces are not very user friendly and do not provide enough automatic hints concerning XBRL taxonomy and validation equation templates. Last but not least,

respondents who were not in the accountancy related profession, including those who did not know much about XBRL, still have very high expectations on the positive impacts of XBRL.

Finally, between November 2010 and April 2011, 38 more telephone interviews and 12 random face-to-face interviews with local British accountants were conducted, being that all tax filings were made mandatory in XBRL from year 2011. However, XBRL adoption in the UK is in an early stage, while HMRC's iXBRL approach mainly involves out-sourcing. Therefore, the greater impact on British accountant and financial report is still some years in the future. Data collected in the UK, especially Scotland, can therefore only be used as referential material to enhance the findings from the US and CN regions, as required in the discourse analysis. Table 39 lists the results taken from these responses, including both telephone interview results and face-to-face interview results.

This time, instead of asking respondents about their opinion of XBRL and non-XBRL accountancy work, a base score of 5 was given to all criteria in non-XBRL work environment, so that respondents faced much fewer questions while providing more compatible answers. In general, local British accountants have much less knowledge or experience of XBRL. Surprisingly, many of those who are in the financial related profession or accountants not dealing with tax filing have never even heard of XBRL. Moreover, those who complete or are preparing to complete tax filings in XBRL format think that using XBRL has not as yet saved them much time. Moreover, it is a very complex procedure compared with non-XBRL filing, especially getting involved with out-sourcing companies in iXBRL. The quality of XBRL formatted financial reports is for now higher in intrinsic and accessibility criteria while lower in contextual and representational

criteria, which is consistent with the findings in the quantitative research section in the previous chapter.

## 5.3.2 Crisis and countermeasures

The biggest crisis emerging from the feedback is that most US based accountants consider that XBRL formatted financial reports have been problematically produced with a huge amount of errors. Whereas the China-based accountants consider the XBRL-formatted financial reports in Shanghai Stock Exchange system not to be usable. They both agree that mandatory XBRL filing has caused a disorder in the preparation of financial reports, and the accounting profession has not yet been greatly affected. The only countermeasures available are to use out-sourcing and wait until XBRL and XBRL application are better developed, the cost of internal adoption has become much cheaper, and the process of preparing and using XBRL formatted financial information has become easier.

Considering the data from all types of survey methods together, the respondents are divided into six parts: correctly completed, partial response, sample loss, out-of-scope, refusals and non-respondents. Only those who completed the entire survey were considered as valid responses. Email addresses were checked by bulk-mailer software and categorised as "not valid", automatically returned as "server does not exist", while telephone numbers were "un-contactable" and contacts that were not in the targeted group were considered to be out of scope. The response rate were calculated as: Response Rate = (Number of Valid Responses)/(Total Number Approached – Out of Scope)  = 139 / (1132-186) = 14.7%

**Figure 60 Types of survey response considered in response rate**
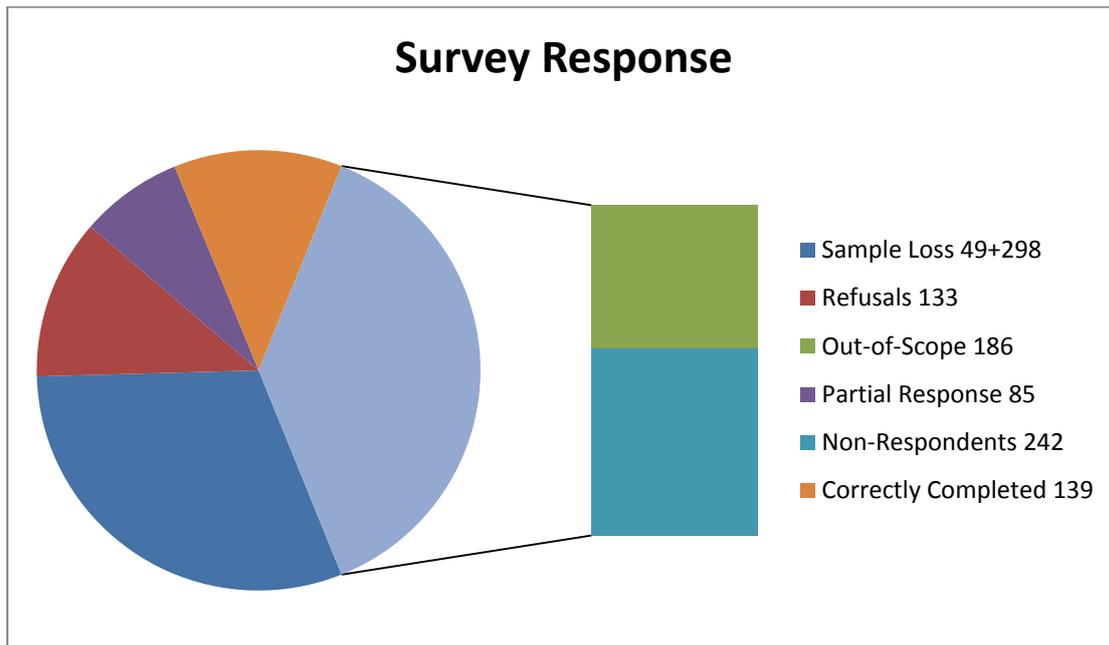


Shown in Figure 60 above, the response rate was high compared to the average response rates of the web focused survey (10%, Greenlaw & Brown-Welty, 2009). There were 298 respondents who are not professional accountants (including these who are accountants but did not have much knowledge of XBRL). They were considered in the sample loss category of respondent type being that without sufficient knowledge or experience of working with XBRL, respondents would have no base upon which to evaluate the impact of XBRL.

Moreover, additional survey reminders were sent to non-respondents and random phone calls were made to check the opinions of non-respondents group against those responded. Results showed that these respondents were consistent, being that experienced XBRL accountants were not very positive about the impact of XBRL to their work efficiency for now. On the other hand, they had a strong belief in the potential of XBRL in the future. However, other respondents in both groups, who were not involved in producing an XBRL formatted financial reports, generally had very high

positive expectations concerning the impact of XBRL after being given an introduction to XBRL.

## 5.3.3 Result and Suggestions

Before categorising data for the purpose of different analysis, Table 40 gives an overall view of all types of survey responses. Those of the 298 who had completed the survey belonged to a non-accounting profession or were not XBRL experienced are provided as a reference (although they were considered as sample loss in the response rate calculation). The highlighted section of the table would be considered as a major valid response in the survey.

**Table 40  Survey Feedback - General**

| 1.Categorising | 2. Specifying | 3. Pre-set Info | 4. Open Info |
|---|---|---|---|
| Accountants & FR Related Professions N=139/437 | Experienced XBRL N=53/437 | Work Efficiency M=7.23 SD=3.87 | Like XBRL or Not M=7.86 SD=4.71 |
| | | Quality of FR M=6.38 SD=3.12 | |
| | Perception (non-exp.) N=86/437 | Perceptions of above E.M=8.19 SD=4.53 Q.M=8.62 SD=3.36 | How to improve |
| Non-Accountant or FR related professions N=298/437 | Knew XBRL N=115/437 | User Point of View M=8.58 SD=4.12 M=7.83 SD=3.59 | Future Expectation |
| | Perception (no- knowledge) N=183/437 | Perceptions of above M=8.32 SD=4.61 M=7.91 SD=3.72 | |

*Note:* Number of Sample = identified/all sample; M=Mean of Answer, SD= Standard Deviation; Scoring from 1 to 10, 1=great depress 6=slight improvement 10=great improvement

From the data in Table 40, we identified that, in general, accountants do think that XBRL would considerably improve the efficiency of their work and slightly improve the quality of financial reports produced. For those who had not participated in producing an XBRL formatted financial reports or who were not in the accountancy related professional or who did not know much about XBRL before the survey, perceptions are generally

much higher and positive regarding the impact that XBRL would bring, compared with accountants experienced in XBRL.

In investigating the data collected through email, web distributions, telephone interviews and face-to-face interviews, it was found that the email and web distributions have a much greater number of respondents than the telephone interviews and face-to-face interviews. However, the respondent rate for the internet approach was much lower than the voice and face approach.

Table 41 shows that, due to the magnitude of the number differences, the result of considering only email and web distribution is not, statistically, much different from the general result. However, in regard to the much smaller size of telephone and face-to-face interviews, it is very distinct.

**Table 41  Survey Feedback – Email + Web**

| 1.Categorising | 2. Specifying | 3. Pre-set Info | 4. Open Info |
|---|---|---|---|
| Accountants & FR Related Professions **N=121/414** | Experienced XBRL **N=47/437** | Work Efficiency **M=7.35 SD=3.68** | Like XBRL or Not **M=7.24 SD=4.57**  How to improve  Future Expectation |
| | | Quality of FR **M=6.41 SD=3.01** | |
| | Perception (non-exp.) **N=74/437** | Perceptions of above **E.M=8.27 SD=4.42 Q.M=8.45 SD=3.17** | |
| Non-Accountant or FR related professions **N=293/414** | Knew XBRL **N=111/437** | User Point of View **M=8.67 SD=4.22 M=7.75 SD=3.64** | |
| | Perception (no- knowledge) **N=182/437** | Perceptions of above **M=8.34 SD=4.68 M=7.86 SD=3.76** | |

**\*Note:** Number of Sample = identified/all sample; M=Mean of Answer, SD= Standard Deviation; Scoring from 1 to 10, 1=great depress 6=slight improvement 10=great improvement

In our interview data analysis, both the original 23 interviews conducted in the US and China and the additional later 50 interviews conducted in the

UK are taken into account. A parallel comparison was mapped in Figure 61 by abstracting four groups of questions in general.

**Figure 61  Interview data by region**
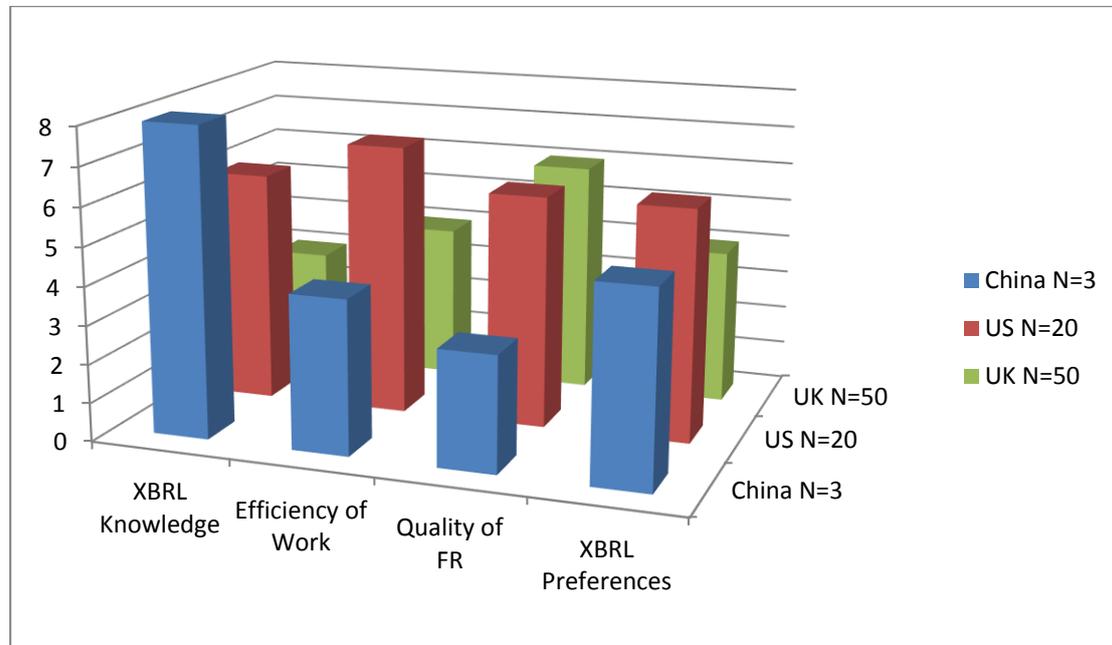


**\*Note:** Scores were evaluated between 0 and 10, where 10 implied the greatest knowledge, the biggest improvement in efficiency, the highest quality of financial reports or the greatest positive tendency towards XBRL.

For those few direct contact, face-to-face interviews conducted, only three were valid (because the others did not even know about XBRL at all). They were researchers who have direct involvement with XBRL in China's Shanghai Stock Exchange system. Therefore, the level of XBRL knowledge is much higher than those professional accountants in the US and the UK. However, owing to the method they used to adopt XBRL (almost all using out-sourcing at the time of interviewing), they concluded that XBRL has almost no impact upon the work efficiency of professional accountants in China. At that time in China, the quality of financial reports produced by those out-sourcing services companies involved a very limited amount of data and was only available in raw coding format, thus having a very low score. Yet the quality XBRL formatted financial report in China did improve greatly after 2009 because of more a complete taxonomy,

better XBRL FR templates and the development of web-based data presentation software. The quantitative analysis of financial reports in last chapter confirmed this. However, the efficiency of an accountant's work after using XBRL has not yet been confirmed.

On the contrary, based on 20 telephone interviews in the US, American accountants are much more passionate about the development and utilisation of XBRL technology. Results show a very positive outlook on the impact that XBRL has had in terms of their work efficiency. The success of XBRL utility software development in Dragon tag and iMatix has greatly supported this evolution. More recently, the development of first XBRL Accounting Analysis software in Singapore and then Rivet in the US, has put the internal adoption of XBRL on schedule and the efficiency of professional accountants has been raised now that they are finally equipped with proper software tools to support their work with XBRL.

Locally, due to late adoption, in Scotland and the greater region of the UK, the knowledge level of XBRL is generally much lower than that of accountants in the US and China. Although this data was obtained two years later than in the US and China, the figures are still not comparative with those of the US, except for the quality of financial reports in the UK, which is almost the same as US XBRL FR and much higher than the first set of Chinese XBRL FR. The main reason for the higher starter XBRL FR quality is the more complete XBRL taxonomy before the period of making XBRL mandatory, while higher quality XBRL FR official templates have been available for free directly to companies or to out-sourcing companies in the iMatrix system.

The free text contents in the questionnaire survey and interviews are very variable and revealed a few new issues that were not considered in the main survey questions. First of all, there is a strong relationship between the level of computer skill and the tendency score of respondents' views regarding XBRL. The number of words they used about computer technology is positively related to the level of scores in the XBRL assessment criteria. For example, the more respondents wrote about the internet, website, sage account software, office and topics regarding other software applications, the higher they marked work efficiency in the XBRL work environment and for using XBRL formatted financial report.

Secondly, in different XBRL adoption regions, the availability and development of XBRL utility software has had a direct influence on the penetration of XBRL adoption, rather than other factors. In regard to which XBRL document creation software were used, the more types of software that were mentioned in that region, the higher the rate of respondents who knew about XBRL.

Finally, most accountants would like to see more data utilisation software designed for XBRL formatted FR data, so that their efficiency in work can be actually improved in all other parts of their work e.g. in FR data re-utilisation rather than uniquely in XBRL FR creation. Many believed that the adoption and development of XBRL utility software will one day ease the current pressure on accountancy work towards the end of each report period.

When we consider group data by accountants who have created XBRL formatted FR, accountants who have not participated in the production of an XBRL formatted FR, and all other non-accountancy related

professionals, we can observe a wave on the evaluation scores of XBRL's impact. Shown in Figure 62, from back to front, the relevancy in the accounting profession and level of XBRL experience and knowledge increases. The expectation of XBRL's impact on accountancy work for accountants who did not have much knowledge about XBRL is lower than other professions. As the level of these accountants' XBRL knowledge increases, their expectation for XBRL also increases again slightly. The data of those 50 interview has been added to this analysis, amongst which only two accountants have actually created XBRL formatted financial reports themselves, while thirty-nine accountants are using out-sourcing or have yet to start tax filing in XBRL, and the other nine respondents are not accountants or in the FR related profession.

This survey shows that the general public believes that XBRL would have a great impact on the efficiency of an accountant's work and will improve the quality of financial reports significantly. Whereas, for accountants who knew about XBRL but have not yet created an XBRL formatted FR, their belief is that the quality of FR will not bring much improvement over non-XBRL formatted FR. Fearing a greater amount of added computer work or collaboration with out-sourcing companies, they are also not very positive about the efficiency of work with XBRL. Yet accountants who did use XBRL have confirmed that the quality of financial reports have been improved, especially in intrinsic and accessibility features. Therefore, the efficiency of their work largely depends on the availability of XBRL utility software they can use in XBRL FR creation, the maintenance of records, and the reuse and analysis of XBRL FR data.

In brief, the impact of adopting XBRL depends on three factors: the knowledge of the XBRL user, the resources to produce and utilise XBRL

FR data, and the institutional environment of XBRL adoption. This knowledge includes understanding of XBRL taxonomy, technical knowledge of XBRL and IT skills to use XBRL utility software. Resources include computer hardware and internet, the amount and quality of XBRL utility software available on the market, and the number of out-sourcing XBRL service companies nearby. Finally, the social and institutional environment includes both the development of XBRL in local regions, government policy towards XBRL adoption, and the support and promotion of professional bodies and international organisations. The better the XBRL taxonomy developed and the more structured the XBRL filing procedure, the higher quality of XBRL FR. The stronger government the government will to use XBRL as FR format, the faster knowledge and resources will develop in the society.

**Figure 62 Interview data by type of respondent**
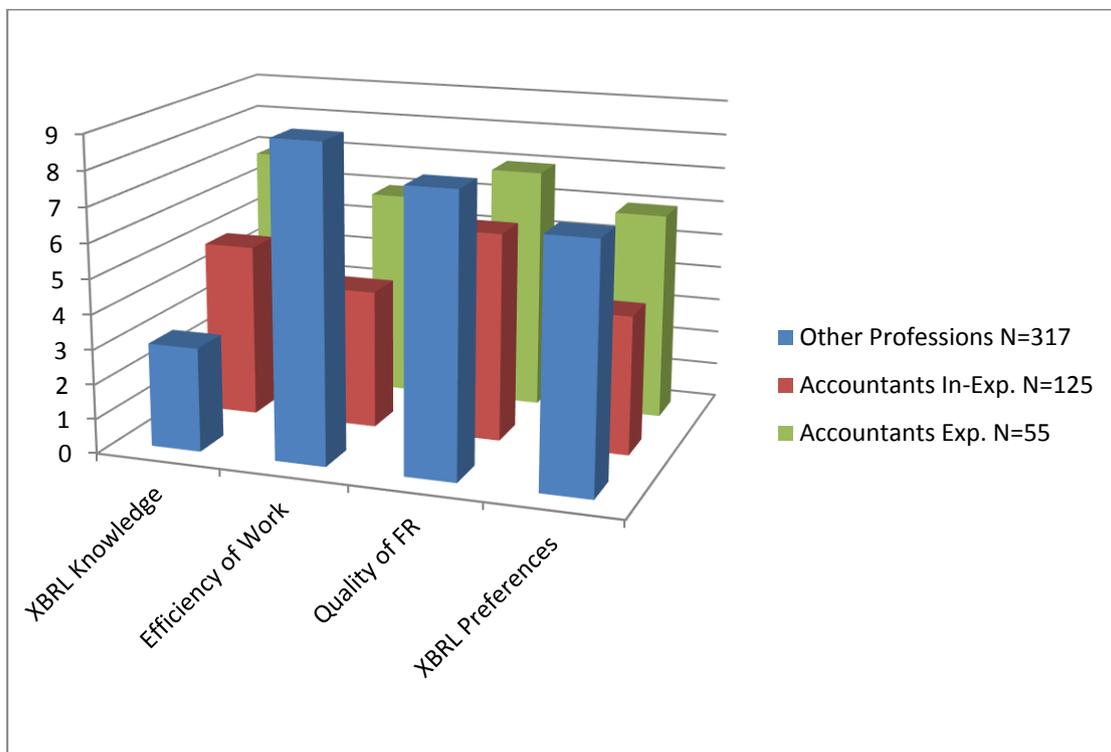


**\*Note:** Scores were evaluated between 0 and 10, where 10 implied the best knowledge, the biggest improvement in efficiency, the highest quality of financial reports or the greatest positive tendency towards XBRL.

Finally, all the data produced and collected had to be put together, to see if they were consistent. Technically, if the social response reflects the expected impact of XBRL on the accounting profession and the quality of financial reports, the marks that were produced from quantitative analysis should be very close to the marks that were collected from the survey.

Table 42 below is a collected average score for selected comparative data from all the past three chapters of this study. Decimal digits are omitted because of the estimated nature of these data. The meanings for the same value in quantitative analysis and those collected from social respondents may imply slight different meanings, due to the differences in the formats of the survey questions.

**Table 42  Efficiency of accountant's work (quantitative vs. survey)**

|  | Time NX1 | Time NX2 | Complexity NX1 | Complexity NX2 | Time X1 | Time X2 | Complexity X1 | Complexity X2 |
|---|---|---|---|---|---|---|---|---|
| **Maintaining accurate records** | 9 | 5 | 3 | 2 | **_3_** | **_6_** | 4 | 7 |
| **Management accounting including budgeting and planning** | **_7_** | **_3_** | 6 | 4 | 5 | 5 | 6 | 5 |
| **Preparing statutory financial accounts** | 9 | 5 | **_7_** | **_4_** | 7 | 9 | 9 | 9 |
| **Understanding and interpreting the statutory financial accounts** | **_7_** | **_2_** | **_8_** | **_3_** | **_3_** | **_6_** | 4 | 8 |
| **Providing accounting information to external bodies** | 8 | 6 | **_7_** | **_2_** | 2 | 5 | 4 | 7 |
| **Others** | 3 | 5 | 3 | 4 | _4_ | _8_ | 8 | 9 |
| **Total score of an Accountants' work** | 6 | 4 | 5 | 3 | 3 | 7 | 5 | 7 |

Note: NX refers to Non-XBRL; X refers to XBRL. 1 refers to data collected via quantitative methods in Chapter five, and 2 refers to data collected via survey methods of questionnaires and interviews all combined. Scores are marked between 0 and 10, where 10 in time score refers to the most time consuming, and 10 in complexity score refers to the most difficult.

The data in Table 42 is a combination of UK BAB survey results (441 samples) for non-XBRL and CFA Institute survey results (862 samples) for XBRL. The original data of the two surveys has been transferred to a mark between 1 and 10 in order to remain consistent for the data range in our study. The overall marks of interpretive analysis are remarkably different from the survey. For example, in the UK BAB, where an original mark is 2 under the scoring range of 1 and 5, it will be transferred to 4 under the 1 and 10 scoring range, and then all sub-criteria will be combined together using the average value as the combined mark of parent criteria.

The biggest difference is that in Chapter Four we expected management accounting, including budgeting and planning, and the understanding and interpretation of the statutory financial accounts to be very difficult in a non-XBRL work environment. However, from this survey, the respondents' opinions prove to be opposite. In many other aspects of the accountant's work, the overall survey results are slightly higher than the expected results with regard to the criterion of complexity.

However, the general trend by each method is the same in time but different in complexity. In the quantitative analysis, the amount of time consumption for doing the same amount and for the same kind of accountancy work is expected to be reduced after the adoption of XBRL. The survey results have shown a similar positive in time requirements for the accountant's work. In the complexity analysis, however, the quantitative method predicted that the complexity of the accountant's work with XBRL would be much lower than without XBRL, while the survey results have shown that current accountants think that work with XBRL is just becoming ever more complex.

Naturally, this difference is expected because of the difference in XBRL adoption levels. In the quantitative analysis, it is assumed that the level of XBRL technology has been well developed, XBRL application software has been widely created and available, professional accountants have good XBRL knowledge and good experiences of producing and utilising XBRL formatted financial data. However, the actual XBRL development level and adoption rate were still at an earlier start stage. Professional accountants are not familiar with new IT based XBRL technology. Therefore, they consider that using XBRL and collaborating external out-sourcing companies to file financial reports is more complex than previously when they did not use XBRL. Over time, if this survey was conducted a few years later, the survey result in complexity of accountancy work would be much closer to the current results derived from quantitative analysis. In particular, if all non-XBRL related criteria were given the same base score of five, instead of making both XBRL and non-XBRL related criteria flexible. The later 50 UK survey were conducted in this improved way. However, in spite of UK-only mandated XBRL filing in 2011, the results were still very close to those of early US and CN surveys.

**Table 43  Quality scores of XBRL financial reports (quantitative in Excel)**

|                | US1  | CN1  | US2  | CN2  | KR   | Average | Round(0) |
|----------------|------|------|------|------|------|---------|----------|
| Accuracy       | 4.23 | 9.29 | 8.35 | 9.2  | 7.84 | 7.782   | 8        |
| Objectivity    | 7.35 | 7.87 | 7.12 | 6.98 | 6.29 | 7.122   | 7        |
| Believability  | 5.86 | 8.19 | 5.43 | 8.83 | 6.37 | 6.936   | 7        |
| Reputation     | 7.67 | 7.62 | 6.79 | 8.12 | 6.99 | 7.438   | 7        |
| Accessibility  | 7.35 | 6.33 | 6.83 | 9.34 | 8.38 | 7.646   | 8        |
| Access Security | 5.24 | 7.85 | 2.83 | 7.22 | 4.32 | 5.492  | 5        |
| Relevancy      | 5.83 | 7.21 | 4.39 | 6.48 | 7.21 | 6.224   | 6        |
| Value-Added    | 4.41 | 5.2  | 2.72 | 7.95 | 3.93 | 4.842   | 5        |
| Timeliness     | 5.37 | 6.74 | 3.45 | 8.19 | 7.39 | 6.228   | 6        |
| Completeness   | 4.58 | 7.11 | 2.33 | 6.87 | 6.29 | 5.436   | 5        |
| Amount of Data | 5.19 | 7.32 | 2.27 | 6.71 | 6.93 | 5.684   | 6        |
| Interpretability | 4.28 | 6.29 | 3.24 | 6.25 | 6.16 | 5.244 | 5        |

| | | | | | | |
|---|---|---|---|---|---|---|
| Ease of Understanding | 5.92 | 7.86 | 2.33 | 7.34 | 5.35 | 5.76 | **6** |
| Concise Representation | 5.37 | 6.46 | 3.18 | 5.15 | 7.54 | 5.54 | **6** |
| Consistent Representation | 5.25 | 7.75 | 5.87 | 7.37 | 8.21 | 6.89 | **7** |

Score between 0 and 10, where 10 represent the best quality.
N=500, 100 samples from each XBRL adoption region or time

The results for the quality of financial reports were, on the other hand, very similar under both data collection methods. Chapter Six combines all the quality markings produced, using average and rounded omission for their decimals. Table 43 shows a fraction of Excel calculations for XBRL FR results in order to prepare it for a comparison with the survey results.

**Table 44  Quality scores of Non-XBRL financial reports (quantitative in Excel)**

| | US1 | CN1 | US2 | CN2 | KR | Average | Round(0) |
|---|---|---|---|---|---|---|---|
| Accuracy | 5 | 8 | 5 | 8 | 6 | 6.4 | **6** |
| Objectivity | 7 | 7 | 8 | 7 | 5 | 6.8 | **7** |
| Believability | 7 | 6 | 6 | 9 | 4 | 6.4 | **6** |
| Reputation | 6 | 7 | 6 | 8 | 5 | 6.4 | **6** |
| Accessibility | 4 | 5 | 5 | 6 | 4 | 4.8 | **5** |
| Access Security | 6 | 7 | 7 | 8 | 4 | 6.4 | **6** |
| Relevancy | 5 | 6 | 8 | 7 | 7 | 6.6 | **7** |
| Value-Added | 4 | 7 | 7 | 8 | 6 | 6.4 | **6** |
| Timeliness | 5 | 7 | 6 | 8 | 6 | 6.4 | **6** |
| Completeness | 6 | 8 | 7 | 8 | 7 | 7.2 | **7** |
| Amount of Data | 4 | 8 | 7 | 8 | 8 | 7 | **7** |
| Interpretability | 6 | 7 | 6 | 5 | 6 | 6 | **6** |
| Ease of Understanding | 7 | 7 | 7 | 7 | 6 | 6.8 | **7** |
| Concise Representation | 5 | 5 | 6 | 5 | 7 | 5.6 | **6** |
| Consistent Representation | 6 | 6 | 4 | 6 | 5 | 5.4 | **5** |

Score between 0 and 10, where 10 represents the best quality.
N=500, 100 samples from each XBRL adoption region or time.
Refined scores are marks of FR samples from PI Navigator database.

Later on, we managed to resource a better sample database for non-XBRL formatted financial reports (Table 44). These markings had much smaller

standard deviations than markings of the original, randomly collected non-XBRL financial reports. Therefore, we improved the reliability of this data, although the actual values were still very close to the original markings of randomly collected non-XBRL financial reports.

Although the mixture of all data results from different regions and times is not ideal, it is still useful to see what it might look like when comparing the combined marking result, based on the qualitative analysis, with the marking result obtained from the survey. We would note that the first period of the US and China markings of XBRL formatted financial reports are significantly different from markings of the same region at a later time. As a result, the combined result should actually be compromised and lower in value for the difference criteria.

**Figure 63 Quality of FR – overall comparison**
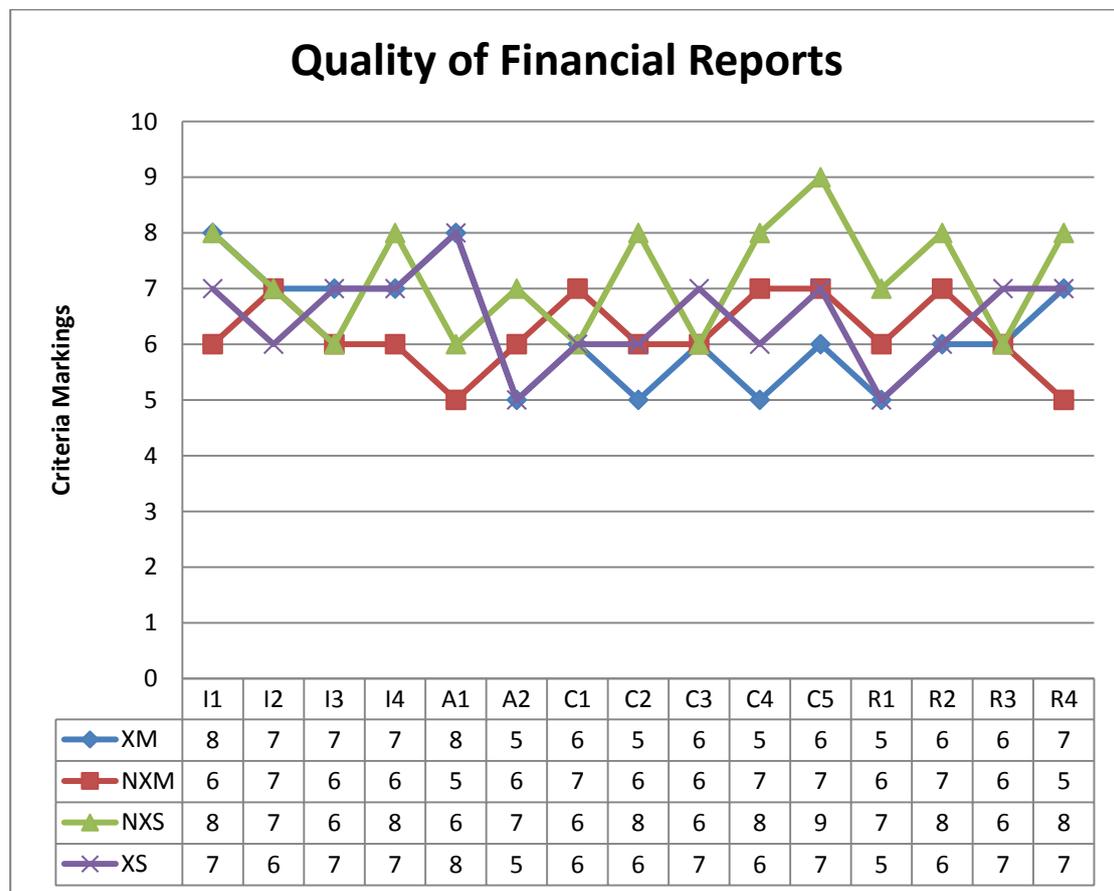


**Quality of Financial Reports**

| | I1 | I2 | I3 | I4 | A1 | A2 | C1 | C2 | C3 | C4 | C5 | R1 | R2 | R3 | R4 |
|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| XM | 8 | 7 | 7 | 7 | 8 | 5 | 6 | 5 | 6 | 5 | 6 | 5 | 6 | 6 | 7 |
| NXM | 6 | 7 | 6 | 6 | 5 | 6 | 7 | 6 | 6 | 7 | 7 | 6 | 7 | 6 | 5 |
| NXS | 8 | 7 | 6 | 8 | 6 | 7 | 6 | 8 | 6 | 8 | 9 | 7 | 8 | 6 | 8 |
| XS | 7 | 6 | 7 | 7 | 8 | 5 | 6 | 6 | 7 | 6 | 7 | 5 | 6 | 7 | 7 |

Figure 63 confirms this assumption. The blue line of the XBRL FR quality marking is lower overall than the purple line of the XBRL FR quality obtained through the survey. There is a bigger difference from the C3 to C5 criteria than the other criteria, which indicates the main improvement of the US and Chinese XBRL FR quality over the two-year gap. These noticeable criteria are Timeliness (C4), Completeness and Amount of Data (C5) - all of which are general contextual quality.

After filtering the first earlier period of two XBRL FR markings, the qualitative marking results showed that XBRL formatted financial reports have an overall better quality than the non-XBRL formatted financial reports, except in Contextual. These XBRL FR markings are also expected to improve quickly over time (differences between US1 and US2, CN1 and CN2). The survey has drawn a similar result: with the current XBRL formatted FR quality lower in general Contextual, slightly lower in accuracy and concise Representation, but higher in all other criteria. To conclude, the evidence from the survey has also served to prove that the methods of evaluating the efficiency of the accountant's work and quality of financial reports are valid.

In all, this chapter re-assessed the impact of XBRL using the survey method. The results of the survey reflected the complexity when adopting

XBRL into an accountant's work. The view of professional accountants who have started working with XBRL has given us a deeper understanding of the impact that XBRL will bring by comparing with qualitative analysis in Chapter Four. The most significant findings are highlighted below.

XBRL has moderately improved the practice of accountants and financial reporting related professions' work both in terms of efficiency and the quality of financial reports produced. XBRL would benefit more from the increases work efficiency of accountants than the improvement in the quality of financial reports.

The public perception of the impact of XBRL is much higher than the actual practice. The more people hear about XBRL, the more likely they expect XBRL to produce a greater impact, whereas in actual practice, XBRL is not bringing as much improvement as they would otherwise anticipate.

Most people are very positive about the impact XBRL would bring, excepting those who have less IT knowledge and are more senior in age (according to their length of accounting experience).

The major appeal of XBRL to professionals who use it is the ease of use for XBRL application software. Current XBRL (including dragon tag) is too complicated in operation and has a very limited function. A future improvement in XBRL, focusing on a more user friendly interface and added data analysis function, would be the key to XBRL adoption success.

# CHAPTER 6

# FINDINGS AND DISCUSSION

The main objective of this thesis has been to assess the impact of XBRL on the accounting profession and the quality of financial reports. Different research methods have been employed for this study, not only to tackle the same research questions but to confirm the findings of the study and examine the issues in their different aspects. On the one hand, the technical part of the expanded literature review chapter has demonstrated how XBRL will affect financial reporting from a theoretical perspective. On the other hand, the analysis and surveys (questionnaires and interviews) have been conducted with regard to the working process and the efficiency of professional accountants reveal the impacts of XBRL on the accounting profession in practice. In addition, the quality of XBRL-formatted and non-XBRL-formatted financial reports has been measured and statistically compared to examine the actual effects of using XBRL.

## 6.1 Implications and alternative explanations for results

It was with this same concern for how XBRL would, theoretically, affect the accountant's profession in that we analysed the results that came from comparing the efficiency of accountants' work with and without XBRL, and from comparing the quality of financial reports prepared in a XBRL-format and non-XBRL format. We then compared the findings that came from the feedback of practitioners who used XBRL with what we found in our quantitative assessments and theoretical analysis.

### 6.1.1 Summary of Significant Expected Results

As we expected, the accessibility and reusability qualities of XBRL formatted financial reports are superior to those of non-XBRL formatted financial reports. In Chapter 4, we found that XBRL has had a great impact on the accounting profession in both the operation process of their work and the routines of their daily job. From the perspective of the technology adoption stage, XBRL would only add additional work to that currently facing accountants and, in general, the accounting profession would not be significantly affected. However, in the second adoption stage and the final stage, after XBRL is well developed and XBRL application software have become more powerful and widely available, we concluded not only that more accountants would be free from financial data processing and report producing but they would be able to perform more financial analysis and financial advising work. Hence, there would be a noticeable switch in the employment of accountants in large companies. The overall efficiency of accountants' work would be greatly improved in almost all aspects of their job.

After measuring and comparing the quality of XBRL and non-XBRL formatted financial reports in Chapter 4, it can be concluded that XBRL would improve the quality of financial reports and the work of accountants greatly, but that the evolution would take time and very much depend on the development of XBRL supporting software and technology. The first group of XBRL formatted financial reports from the US EDGAR Online system and the first group of the Shanghai Stock Exchange system have both demonstrated much lower quality than the non-XBRL formatted financial reports in terms of their contextual and representational features. The accuracy of the XBRL formatted financial reports in these two first groups is very poor.

After two years, both the EDGAR Online and Shanghai Stock Exchange updated their web system with a better utility interface and XBRL taxonomy. As a result, the quality of XBRL formatted financial reports of the second group showed a significant improvement and are generally superior in all aspects compared with non-XBRL formatted financial reports of the same period, especially in terms of their intrinsic and accessibility qualities. In both cases, the study has confirmed that XBRL would have a great impact on both the efficiency of the accountant's work and the quality of their work produced. In both cases, they are also deeply dependent on the technology development of an XBRL taxonomy and XBRL application software which could be slow at the beginning, but accelerating afterwards. The efficiency of the accountant's work would be improved by XBRL mainly in terms of time savings from bookkeeping to financial reporting process and having powerful computer assistant tools in financial analysis. The quality of the accountant's work produced would be improved mainly in terms of timeliness, accuracy and accessibility.

### 6.1.2 Summary of Non-Results and Contrary Results

On the other hand, the accuracy and reliability of XBRL formatted financial report are not significantly higher than non-XBRL formatted financial reports, and in certain cases they are lower. This issue has raised great doubts about XBRL, especially in the US, and both our analysis and actual events have confirmed this. Moreover, the impact on the accounting profession has not been as great as anticipated. The revolutionary changes that XBRL might bring to the accounting profession may still wait for another decade to reveal themselves. When comparing the findings from questionnaires and interviews with previous theoretical analysis, we identified that in both cases the more experienced the accountant using

XBRL and functional XBRL applications, the more influence XBRL would have in their work.

In theory, XBRL should have a greater impact on the quality of financial reports and the accounting profession as a whole, with the only obstacle being the development and adoption stage of XBRL itself. However, the feedback from the survey shows that a lot of issues emerge when accountants try to learn XBRL and take full advantage of the benefits that XBRL application software could bring. XBRL has huge potential advantages over non-XBRL financial reporting and could improve the efficiency and quality of accountants' work in numerous ways. The accuracy and timeliness of doing financial reporting in XBRL would open up possibilities of continuous financial reporting, which make financial management, investment and government invigilation more efficient. Accountants using XBRL application software could save a huge part of their time traditionally spent on financial data collection, preparation and producing financial reports. For now, advanced XBRL software for bookkeeping, XBRL financial report creation and XBRL finance analysis needs to be developed to realise all these possibilities and potential of XBRL.

## 6.2 Limitations

Although this research has constructed two samples of the modelling method to assess the efficiency of the accountants' work and the quality of financial reports, the factors in these models still need to be subject to further significance tests to ensure the relevance of each criterion in these two models. In this study, the theoretical part was focused on conducting a complete assessment of the impact of XBRL on accountants' work and the quality of financial reporting. In contrast, it did not test the feasibility of

each individual procedures and hypothesis during this process because no XBRL related modelling was available for these two assessments at the time of this research. Future research could then be conducted regarding the selection of factors for each assessment model, the relationship and calculation methods between these criteria, marking methods for these factors and the implications of the different types of results.

The XBRL experience survey we conducted was mainly used to compare the results produced by those models. Many other researchers are still conducting surveys on topics related to the pre-adoption of XBRL, this research is still in its early stages regarding the technology adoption period. To improve the quality of the results of the XBRL experience survey, future research can:

➢ Increase the size of the respondent pool;

➢ Expand the region of survey distribution;

➢ Focus on using an individual type of survey methodology (different from the combined methods in the approach);

➢ Improve the selection of questions with regard to the further testing of factors in the assessment models;

➢ Conduct this survey again when XBRL has been better developed and adopted.

More specifically, regarding XBRL adoption in the UK, more XBRL experience survey questionnaires and interviews can be distributed to local private accountants. Public accountants could be treated as a different respondent group being that, in the first few years of XBRL adoption when most companies use out-sourcing, it is very likely that they would replace existing public accountants with those of out-sourcing companies. The UK has only started to mandate all tax filings in XBRL from 2011. As a result,

most parts of this research cannot be conducted locally. The 50 additional UK survey interviews in this study were conducted in the very early XBRL adoption stage. Most UK respondents do not know much about XBRL, and the validity of these data regarding the impact of XBRL after adopting XBRL is not fully convincing. Therefore, if we use a similar method in this study a few years later, we are confident that we will attain more relevant and more reliable results for the UK.

Further research could also expand the topic of this study not only regarding the impacts on accountant, but also in reference to other financial information users, such as investors, auditors and marketing analysts. Similar efficiency models can be applied to these professions. However, the factors for these models might have to be selected from other research studies regarding what those professions do and the content of their work with respect to time and complexity. These factors can then be compared with the marking of those studies of the same professionals who have not yet started to use XBRL.

## 6.3 Contributions

We can see that from the results of both theoretical analysis and the surveys that the impact that XBRL has on accountants' work and the quality of financial reports is significant. This impact is also likely to become greater over time with the development of XBRL technology and the level of XBRL adoption. Yet, in practice, the actual changes that XBRL would bring to the work of professional accountants might not be always positive in the early XBRL technology adoption stages.

XBRL will neither slow nor speed up accountants' work in the short term when it is first adopted because of the requirement of increased translation work of financial data into an XBRL format, along with the lack of helpful XBRL software. However, XBRL will make accountants' work more efficient in the long term, after the wide adoption of XBRL and the effective development of XBRL based software. The nature of an accountant's work will then become more analytical. The qualities of financial reports in XBRL are already much higher than non-XBRL reports, in terms of accessibility, accuracy, usefulness and compatibility. Once the XBRL taxonomy and application software has gone through two more generations of development after the current stage, financial reports in the XBRL format will show significant gains over traditional non-XBRL financial reports. Moreover, they will be required in most accounting systems across the world to perform modern digital financial reporting, analysis and financial data management.

Financial information users, such as auditors, investors, analysts and researchers, will benefit more from XBRL-based financial reporting than accountants. Being that the accountants are mainly playing a supporting role in preparing these XBRL formatted financial information, it is the mass information users who will find more convenience in searching, accessing and analysing the information obtained from XBRL-based reports. However, future private accountants may expect to shift roles from information users to information preparers, with the nature of their work containing more analysis and providing more financial advice and consulting services to their organisations.

The only disadvantage and major problem of adopting XBRL in financial reporting and for the work of accountants lies in the development of the

technology itself and its implementation in individual cases. At the start of XBRL adoption, when an XBRL taxonomy was still not very well designed and the global financial reporting environment had not been harmonised, many countries would try to make XBRL mandatory in their financial reporting process to take earlier steps in the adoption. However, these efforts should have been companied by adequate XBRL education and software bank resources before implementing. Otherwise, we will see again that the first adoption process will either become a waste of investment, or the result of these efforts will become a superficial presentation of XBRL capability, or there will be evidence that adoption has not been successfully carried out at all.

The impact that XBRL shall bring to financial reporting and accountants work is also very variable depending on the current stage of technology development. When analysing and predicting the possible changes that XBRL will make, the conclusions should refer to the appropriate XBRL technology adoption stage. In this stage, XBRL can make a negative impact on the professional accountant's work, but these affects will turn significantly positive over time with the development and adoption of XBRL. XBRL will then bring a whole new range of financial reporting practices and dimensions of financial reporting theories all along the adoption process.

In financial reporting practice, there has been a lot of unnecessary and impractical operations at the beginning of the process of adopting XBRL, because the XBRL taxonomy and related application software are not well developed. For example, one issue was the translating and producing a large amount of XBRL formatted financial reports when the first versions of XBRL taxonomy were published. When there was insufficient good

quality assisted XBRL tagging software and not much in the way of good data management software, the final result of trying to produce financial reports in XBRL ended with low quality XBRL formatted financial reports. In addition, the tagged process may only be manually possible and so waste a huge amount of work. To avoid this, XBRL adoption pioneer countries can instead perform more experimental XBRL adoption operations, while countries that are slower in the development and adoption process of XBRL could learn more about the adoption process and improve the existing XBRL applications from the XBRL adoption pioneer countries before implementing serious operations and wide application.

## 6.4 Future Research

The concept of the efficiency model sets a good example for analysing the general impact of other new technologies on related professions. At the same time, the model of quality index system scoring system can be used as a general standard to assess the quality of financial reports. These quality scores can be used to compare many other different financial reports. For example: financial reports of XBRL with non-XBRL in this study to assess the impact of XBRL technology; financial reports of different periods of the same company to assess the quality of their accountants' work; and the financial reports of different regions to assess the national financial report standard.

Typically, this study would help professional accountants and professions involving financial reporting to have a better understanding of the possible impacts that XBRL would bring into their work, and the requirement for them to be better prepared for the transition from non-XBRL financial reporting to the digital era.

The following provides some recommendations with regard to the adoption of XBRL.

For accountants, it would be better to start learning about XBRL from the earliest stage. A certain level of XBRL education would be necessary in the beginning of the second adoption stage. Regarding the direction of accountancy education, it would be better if it tended towards the analytical side. For those accountants who are currently working on book keeping and financial reporting production, it would better to start learn to do those jobs by applying XBRL as early as possible.

For companies, using external financial service companies is recommended, instead of investing a lot of money in XBRL software and accountants training in the early XBRL adoption stage. Small companies should install as many free trial versions of XBRL application software in their accountants' computers as early as they can. This would equipment their companies with XBRL financial reporting capability with no significant costs. For larger companies, the situation is different, because good XBRL software would save them spending on employment even at an early stage, which could also save costs in using external accountancy service companies to produce XBRL formatted reports compared with smaller sized companies.

Later on, in and even after the second stage, when XBRL is well developed and XBRL application software has become very powerful as well as widely available and cheap, all companies should use XBRL as their main financial reporting system, although an optimised strategy might be different depending on the size of the company. For smaller sized

companies with limited resources, the application of XBRL can simply involve commercial XBRL based machines (e.g., casher machine, bank card reader, fund authorising machine, etc.) and XBRL software on accountants' computers. For larger sized companies, better efficiency can be achieved by constructing their own internal XBRL online database and financial reporting system.

For governments, it is advisable to introduce XBRL to the financial system as early as possible, but mandatory introduction is not necessary in practice. Being that the technology is not yet ready and very few people know about it yet, evidence from those countries that have already made XBRL mandatory (US, China, etc.) is merely based on the action of external financial services in translating non-XBRL financial reports to XBRL for government filings. This would create new business opportunities for XBRL formatted financial report translation in the early stage of XBRL adoption, despite the fact that the operation only provides a buffering effect between the adoption level on the government side and the corporate side. Governments who are willing to take on that cost should make sure they provide plenty of external XBRL translation services and education resources before making it mandatory. However, after entering the second XBRL adoption stage, all governments should make XBRL their major financial reporting format, which is also required in international trading and investment. Earlier adopters with a high economic growth rate would attract more investment because of increased financial transparency, such as the case of South Korea.

For different information users of other types (for example, investors and academics) the urge to learn and use XBRL is not as pressing as that of accountants. Being that XBRL provides a graphic presentation which looks

similar to traditional financial statements, with much easier access to financial data in search and comparison, information users do not have to adapt to XBRL. However, XBRL applications would generate variable formats of financial data to adapt to its users. Currently, both the US EDGAR Online System and the Korean Stock Exchange system already provide online reports and XBRL comparison applications. In the future, when more individual XBRL financial data collecting and analysis tools are available, these would surely be very helpful to those information users who employ these tools.


## 6.5 Conclusions

In the early adoption stage, XBRL created additional work and IT problems for accountants. XBRL formatted financial reports would co-exist with non-XBRL originated financial reports through this stage. However, the applications and advantages of XBRL will increase over time, and replace non-XBRL originated financial data after the second adoption stage of XBRL. Current XBRL adoption mainly relies on out-sourcing in many countries. Without internally adopting XBRL and the implementation of an XBRL based working process, XBRL will not have a great impact on financial reporting and the accounting profession.

This thesis has suggested that, XBRL has great potential for the future. A significant improvement in work efficiency and financial report quality are expected after the taxonomy and software applications of XBRL become mature. From the perspective of our theoretical analysis, XBRL will reduce the time required to perform the same amount of work in book keeping and data re-use, without increasing general complexity. As a result, after XBRL

has been better developed and gradually applied in different parts of the working process, the nature of the professional accountant's work will become more analytical.

The quality of XBRL formatted financial reports has not been greatly improved in terms of accuracy and the amount of information contained when compared to previous non-XBRL formatted reports. The problem was the preponderance of bugs in the current design of an XBRL taxonomy on profit or deficit issues. Errors in the first series of XBRL formatted financial reports in the US were mostly caused by the sign rather than the correct number. Yet, two years later, the second series of XBRL formatted financial reports has greatly improved both of these quality criteria.

The survey results also confirm the non-ideal status of XBRL development and applications in the current stage of adoption, but still point to great potential for the future. In addition, many current XBRL users indicated that the ease of use in XBRL application software, rather than their powerful functions, is the major obstacle in the adoption process of XBRL.

In all, the impact of XBRL on financial reporting and the accounting profession is not as great as promoted by XBRL International. XBRL does bring improved accessibility and convenience to financial reporting for different stakeholders. However, the popularity of XBRL is much higher than the development of XBRL and XBRL based applications. On the other hand, the accounting profession does not need to study XBRL as a programmer, because XBRL based software will be integrated into internal accounting information system and commonly used accounting software such as Sage series applications. Nonetheless, with the development of XBRL based financial analysis applications, XBRL could make the

accountant profession more analytical. The employment requirement on the part of the accounting profession has also added basic knowledge regarding XBRL and the skills of using XBRL based applications. While the research indicates that XBRL does not drive broad changes in the quality of financial reports and the accounting profession, it can be leveraged together with other technologies towards the goal of improvement.

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# APPENDIXES

*Appendix A. Questionnaire*

## Edinburgh Napier University

School of Accounting, Finance and Economics

QUESTIONNAIRE

# THE IMPACT OF XBRL

## TO FINANCIAL REPORTING AND THE ACCOUNTING PROFESSION

CONTACT: ZHENKUN WANG

ADDRESS: ROOM 1/38, Edinburgh Napier University,

Craiglockhart Campus, Edinburgh, UK  EH14 1DJ

PHONE: +44 774 3951 437

EMAIL: ZH.WANG@NAPIER.AC.UK

WEBSITE: WWW.XBRL.CN

Dear Sir/Madam, thank you for taking time respond to this survey. We are conducting a research to know more about the impact of XBRL to Financial Reporting and how much XBRL your work in accountancy related profession. So that problems when adopting XBRL can be identified and XBRL could be improved to suite professional needs better. Please help us by answering short questions below.

```
                            BACK GROUND
```

**1. What's your profession please?**

A. Accountant: _____ (what type of accountant please?)
B. Other Financial Reporting Related: _____ (please specify)
C. Others: _____ (please specify)

**2. Could you describe what's your job mainly involves please?**
    **And please estimate the percentage how much it weights in all your work.**

A. Maintaining accurate records, _____%_

B. Management accounting including budgeting and planning,  _____%_

C. Preparing statutory financial accounts, _____%_

D. Understanding and interpreting the statutory financial accounts, _____%_

E.  Providing accounting information to external bodies, _____%_

F. None of above: _____ (please specify), _____%_

G. None of above: _____ (please specify), _____%_

H. None of above: _____ (please specify), _____%_

I. Don't know or other non-accountancy related

**3. Which country are these financial reports that you are dealing with based on please?**

A. United State

B. United Kingdom

C. People's Republic of China

D. South Korean

E. Other countries: _____ (please specify)

F. More than one economic region: _____ (please specify)

**4. How much do you know about XBRL?**

A. Expert

B. General understanding

C. Had heard about it and read about it

D. Never heard of it before (please go to question 18.)

**5. Have you used XBRL to produce a financial report before please?**

A. Yes, by myself using software B. Yes, by out-sourcing company B. No, not yet.

**6. Do you read XBRL formatted financial reports (including web integrated version)?**

A. Yes, a lot. XBRL is the major format in the database source I use now.

B. Yes, a few. They are mixed with non-XBRL formatted financial reports.

C. No, I only read non-XBRL formatted financial report in paper, pdf and excel.

D. No, I don't read or prepare financial reports.

```
IMPACT OF XBRL TO YOUR WORK
```

**7. How much time do you spend on each work and how complex do you think it is please?**
(Rank the time requirement and complexity from 0 to 10, where work with a time score of 10 is very time consuming; work with a complexity score of 10 is extremely hard to do; )

| Content of your work | Non-XBRL | | Using XBRL | |
|---|---|---|---|---|
| | Time | Complexity | Time | Complexity |
| A. Maintaining accurate records | | | | |
| B. Management accounting including budgeting and planning | | | | |
| C. Preparing statutory financial accounts | | | | |
| D. Understanding and interpreting the statutory financial accounts | | | | |
| E. Providing accounting information to external bodies | | | | |
| F. None of above (same as in question 2) | | | | |
| G. None of above (same as in question 2) | | | | |
| H. None of above (same as in question 2) | | | | |
| I. Other Non-accountancy Related | | | | |
| **Over-all Score** | | | | |

Note: If you haven't used XBRL or related XBRL applications in your work, please use estimation, and mark it with "#".  E.g. 7#

**8. How XBRL has affected your work please?**

    A. Position   B. Negative  C. Affected but Neutral   D. No effect at all

If you have more time, could you describe in details please?

---

**THE QUALITY OF FINANCIAL REPORT IN XBRL AND NON-XBRL FORMAT**

**9. What do you think the quality of XBRL formatted financial reports please?**

(Comparing with previous non-XBRL formatted financial reports) Rank between 0 and 10, where a financial report with a score of 10 has the highest quality.

| Data Quality Category | Data Quality Dimensions | XBRL | Non-XBRL |
|---|---|---|---|
| Intrinsic | Accuracy | | |
| | Objectivity | | |
| | Believability | | |
| | Reputation | | |
| Accessibility | Accessibility | | |
| | Access Security | | |
| Contextual | Relevancy | | |
| | Value-Added | | |
| | Timeliness | | |
| | Completeness | | |
| | Amount of Data | | |
| Representational | Interpretability | | |
| | Ease of Understanding | | |
| | Concise Representation | | |
| | Consistent Representation | | |
| **Over-all Score** | | | |

Note: If you haven't used XBRL or related XBRL applications in your work, please use estimation, and mark it with "#".  E.g. 7#

> If you think table above could not represent the typical qualities of financial reports that you are using or producing, could you describe in details please?

**10. Do you think it's easy to produce a XBRL formatted financial reports please?**
   A. Yes, very simple   B. No, very complex   C. Neither easy nor hard
   D. I don't know, never produced a XBRL financial report before.

**11. Which software do you use to produce an XBRL formatted financial reports please?**

A. Dragon Tag or other plug-in for Excel/Sage: _____ (please specify)

B. iMatrix, or other dedicated XBRL software: _____ (please specify)

C. I use website integrated software: _____ (please specify)

D. I use templates: provided by regulator's official website, or _____

F. I use XBRL translation services provide by external companies: _____

E. Others: _____ (please specify)

F. I don't produce financial reports in XBRL format.

## FREE QUESTIONS

**12. How do you think XBRL can be improved as a technology?**

A. XBRL Specification:  Simpler/ Good as it is/ More complete/ Others_____

B. XBRL Taxonomy: Allow more extensions/ Good as it is/ No extension/ Others_____

C. Data Security: More secure/ Good as it is/ More accessible/ Others_____

D. Validation: More strict/ Good as it is/ More

E. None of above: _____ (please specify)

F. None of above: _____ (please specify)

G. None of above: _____ (please specify)

H. I don't know.

**13. Why types of XBRL related applications do you think are most useful?**

A. Book keeping software with XBRL built-in

B. XBRL validation software to check mathematical mistakes and XBRL grammar

C. Utility software to produce different type of financial reports from XBRL data

E. Searching engine for XBRL formatted financial data

F. Financial analysis software that utilize XBRL formatted financial reports

G. Language and accounting standard tools that translates between different XBRL reports

H. Others: _____ (please specify)


**14. How did you learn about XBRL please?**

**A.** Internet **B.** Books **C.** Classes **D.** Colleagues/Friends **E.** Outsourcing Companies **F.** Others:

| |
|---|
| Could you describe in details please? |


**15. What do you think is the best way to adopt XBRL for the government?**
**A.** Mandatory **B.** Voluntary **C.** Voluntary then Mandatory **D.** No adoption **E.** Others:

| |
|---|
| Could you describe in details please? |


**16. What do you think is the best strategy for companies to adopt XBRL?**
**A.** Out-sourcing **B.** Internal **C.** Mixed **D.** Gradually from Out-sourcing to Internal **E.** Others:

| |
|---|
| Could you describe in details please? |

**17. What would you expect XBRL would affect your work in the future?**
**A.** Very Positive **B.** Positive **C.** Neutral **D.** Negative **E.** Very Negative **F.** Others:

Could you describe in details please?

| SIDE QUESTIONS |
| --- |

18. If you are not an accountant or financial report related professional, do you think XBRL would impact your work as well?
**A.** Yes, positive **B.** Yes, negative **B.** No effect at all **C.** I don't know

Could you describe in details please?

19. If you didn't know about XBRL, but learnt about it from the information and links provided by this questionnaire, do you think XBRL would impact your work please?
**A.** Yes, positive **B.** Yes, negative **B.** No effect at all **C.** I don't know

Could you describe in details please?

20. If you didn't know XBRL, and still haven't learnt anything about it yet, how would you like to learn about it in the future please?
 **A.** Internet **B.** Books **C.** Classes **D.** Colleagues/Friends **E.** Outsourcing Companies **F.** Others:

Could you describe in details please?

## *Thank you for your help!*

## *W*OULD YOU LIKE TO BE INFORMED ABOUT RESEARCH RESULTS OR BE CONTACTED FOR FUTURE QUESTIONNAIRES PLEASE?

Your Name: _____

Profession: _____

Company: _____

Address:

_____

Phone: _____

Email: _____

Would you consider an interview with us in the future please?

**A.** Yes, via telephone **B.** Yes, face-to-face **C.** No, I don't have time for interviews.

## *T*O CONTACT US:

CONTACT: ZHENKUN WANG (Felix)
ADDRESS:
ROOM 1/38, Edinburgh Napier University,
Craiglockhart Campus, Edinburgh, UK  EH14 1DJ
PHONE: +44 774 3951 437
EMAIL: ZH.WANG@NAPIER.AC.UK    WEBSITE: WWW.XBRL.CN

## *S*EE RESERCH RESULT AND FUTHER INFORMATION:

http://xbrl.cn/questionnaire/results/

http://xbrl.cn/questionnaire/participant

http://xbrl.cn/questionnaire/more

## *R*ELATED INFORMATION AND STUDY RESOURCES OF XBRL:

http://xbrl.cn/aboutxbrl , study resources on our research website

http://xbrl.org , XBRL International Official Website

http://xbrleducation.com , a good academic website about XBRL studies

http://www.tryxbrl.com , a practical website to try XBRL yourself

http://www.xbrl.org/Tools/ , List of XBRL application software

http://www.xbrl.org/ProductsandServices/ , List of XBRL service providers

http://www.hmrc.gov.uk/ct/ct-online/file-return/xbrl-guide.pdf  Official XBRL guide for UK business

## *Appendix B. Survey questions for different groups*

*Accountants who don't know XBRL before*

*Questions will be designed to meet this group of accounting professionals.*

*The first question will be:*

*How much do you know about XBRL (eXtensible Business Report Language) please?*
*Options: 1.Never 2. A little 3.Moderate 4. Good Experience 5. Expert*

*If Chosen option 1, then direct to a webpage about what it is*
*If Chosen option 2, then direct to a webpage about what it is briefly*

*Then ask if and how much they want to know about XBRL?*
*What they want to know about XBRL?*
*Preferred methods and resources of study*

*If Chosen option 3,4,5- go to the second part of the questionnaire, see the next section*

*Samples accountants, who chose question 5, will be pool into your interview list.*

*People who already use XBRL*

*The most valuable opinions are from this group of samples.*

*Accountancy professionals, who already had experience of XBRL, will be able to discover a lot of potential problems and impacts of XBRL bringing into their work. Questions for this group will be complex, but also provide enough flexibility.*

*Key questions include:*

*Do you think XBRL have Positive/Negative Impact to your work?*
*Strongly Negative, Moderately Negative, Neither, M-Positive, S-Positive*

*Does using XBRL speeding up you preparing financial report?*
*Disagree --------------------------------Agree*

*Does using XBRL help your produce a higher quality of reports?*
*Disagree -------------------------------Agree*

*Does using XBRL make your work easier?*

*Do you think XBRL will affect employment of accountants?*

*Does XBRL change the nature and content of your work?*
*Do you think will?.. .*

*In all, Do you like XBRL ? .. ☺ …)*

*Appendix C. List of sample XBRL data of companies with Marking*

PDF formatted files are non-XBRL FR, XML formatted files are XBRL FR. First group with company name and year of FR are from the US. Second group with listed company Stock Exchange ID number as file names are from China. Final group is from South Korean.

**List of non-XBRL financial reports used in the quality marking (US/CN/KR)**

Region: US,   Period 01, source:  PI-Navigator

| Date | Description |
|------|-------------|
| 01/01/2006 | AIR PRODUCTS AND CHEMICALS INCORPORATED: SUSTAINABILITY REPORT 2006 |
| 01/01/2006 | CALIFORNIA PIZZA KITCHEN INCORPORATED: REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | CEC ENTERTAINMENT INCORPORATED: SUMMARY REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | CHESAPEAKE CORPORATION: REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | CYPRESS SEMICONDUCTOR CORPORATION: REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | DOMINO'S PIZZA INCORPORATED: REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | GENTIVA HEALTH SERVICES INCORPORATED: REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | GEO GROUP INCORPORATED: REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | GTC BIOTHERAPEUTICS INCORPORATED: REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | ILLUMINA INCORPORATED: REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | INTERFACE INCORPORATED: REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | J ALEXANDER'S CORPORATION: REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | KELLY SERVICES INCORPORATED: REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | LAKES ENTERTAINMENT INCORPORATED: REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | PEETS COFFEE AND TEA INCORPORATED: REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | ROGERS CORPORATION: REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | SANDISK CORPORATION: REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | SEROLOGICALS CORPORATION: REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | SMART AND FINAL INCORPORATED: SUMMARY REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | SPHERION CORPORATION: SUMMARY REPORT AND ACCOUNTS 2005/2006 |
| 01/01/2006 | TRIARC COMPANIES INCORPORATED: REPORT AND ACCOUNTS 2005/2006 |
| 02/01/2006 | COSI INCORPORATED: REPORT AND ACCOUNTS 2005/2006 |
| 02/01/2006 | SMITH AND WOLLENSKY RESTAURANT GROUP INCORPORATED: REPORT AND ACCOUNT 2005/2006 |
| 03/01/2006 | BIOCOL, INC.: FILES FORM NTN 10K |
| 03/01/2006 | BJ'S RESTAURANTS INCORPORATED: SUMMARY REPORT AND ACCOUNTS 2005/2006 |
| 03/01/2006 | CHEESECAKE FACTORY INCORPORATED: REPORT AND ACCOUNTS 2005/2006 |
| 03/01/2006 | EARTHWORKS ENTERTAINMENT INC: FILES FORM NTN 10K |
| 03/01/2006 | ENDO NETWORKS INC: FILES FORM NTN 10K |
| 03/01/2006 | FAMILY HEALTHCARE SOLUTIONS INC: FILES FORM NTN 10K |
| 03/01/2006 | GOLDEN CHIEF RESOURCES INC: FILES FORM NTN 10K |
| 03/01/2006 | NATIONAL REALTY & MORTGAGE INC: FILES FORM NTN 10K |
| 03/01/2006 | NETCHOICE INC: FILES FORM NTN 10K |
| 03/01/2006 | PIERRE FOODS INC: FILES FORM 10-K/A |
| 03/01/2006 | VOS INTERNATIONAL INC: FILES FORM NTN 10K |
| 03/01/2006 | ZOLTEK COMPANIES INC: FILES FORM 10-K |
| 04/01/2006 | COMMERCE DEVELOPMENT CORP LTD: FILES FORM 10KSB/A |
| 04/01/2006 | ENERGY CONVERSION DEVICES INC: FILES FORM 10-K/A |

04/01/2006   KULICKE & SOFFA INDUSTRIES INC: FILES FORM 10-K/A
04/01/2006   MODERN TECHNOLOGY CORP: FILES FORM 10KSB/A
04/01/2006   NEWMARKET TECHNOLOGY INC: FILES FORM 10KSB/A
04/01/2006   QUADRAMED CORP: FILES FORM 10-K/A
04/01/2006   SPESCOM SOFTWARE INC: FILES FORM 10-K
05/01/2006   CANADIAN ROCKPORT HOMES INTERNATIONAL INC: FILES FORM 10-K/A
05/01/2006   K TEL INTERNATIONAL INC: FILES FORM 10-K/A
05/01/2006   MCI INC: FILES FORM 10-K/A
05/01/2006   MONEY TREE, INC.: FILES FORM 10-K
05/01/2006   POMEROY IT SOLUTIONS INCORPORATED: REPORT AND ACCOUNTS 2005/2006
06/01/2006   ARCHON CORP: FILES FORM 10-K
06/01/2006   CPI HOLDCO INC: FILES FORM 10-K/A
06/01/2006   DIGITAL DESCRIPTOR SYSTEMS INC: FILES FORM 10KSB/A
06/01/2006   ESTERLINE TECHNOLOGIES CORP: FILES FORM 10-K
06/01/2006   GENESIS REALTY GROUP INC: FILES FORM 10KSB/A
06/01/2006   HARLEYSVILLE GROUP INC: FILES FORM 10-K/A
06/01/2006   INTERNATIONAL DEVELOPMENT CORP: FILES FORM 10KSB/A
06/01/2006   ITRONICS INC: FILES FORM 10KSB/A
06/01/2006   NORTH EUROPEAN OIL ROYALTY TRUST: FILES FORM 10-K
06/01/2006   S&C HOLDCO 3 INC: FILES FORM 10-K/A
06/01/2006   SOVRAN SELF STORAGE INC: FILES FORM 10-K/A
06/01/2006   SPARTA COMMERCIAL SERVICES, INC.: FILES FORM 10KSB/A
06/01/2006   VIDEO WITHOUT BOUNDARIES INC: FILES FORM 10KSB/A
06/01/2006   WINSONIC DIGITAL MEDIA GROUP LTD: FILES FORM 10KSB/A
09/01/2006   ARCH COAL INC: FILES FORM 10-K/A
09/01/2006   DYNADAPT SYSTEM INC: FILES FORM 10KSB/A
09/01/2006   ENGINEERED SUPPORT SYSTEMS INC: FILES FORM 10-K
09/01/2006   MATERIAL SCIENCES CORP: FILES FORM 10-K/A
09/01/2006   PRIME RESOURCE INC: FILES FORM 10KSB/A
09/01/2006   XETA TECHNOLOGIES INC: FILES FORM 10-K
10/01/2006   AULT INC: FILES FORM 10-K/A
10/01/2006   CARSUNLIMITED COM INC: FILES FORM 10KSB/A
10/01/2006   CENTERPOINT ENERGY INC: FILES FORM 10-K/A
10/01/2006   CENTERPOINT ENERGY RESOURCES CORP: FILES FORM 10-K/A
10/01/2006   CORONADO INDUSTRIES INC: FILES FORM 10KSB/A
10/01/2006   DOLPHIN PRODUCTIONS INC: FILES FORM 10KSB/A
10/01/2006   ESTERLINE TECHNOLOGIES CORP: FILES FORM 10-K/A
10/01/2006   EXABYTE CORP /DE/: FILES FORM 10-K/A
10/01/2006   FEDDERS CORP /DE: FILES FORM 10-K/A
10/01/2006   INTERNATIONAL DISPLAYWORKS, INC: FILES FORM 10-K
10/01/2006   L & L FINANCIAL HOLDINGS INC: FILES FORM 10KSB/A
10/01/2006   NOVELL INC: FILES FORM 10-K
10/01/2006   RAND ACQUISITION CORP: FILES FORM 10KSB/A
10/01/2006   ST ONLINE CORP.: FILES FORM NTN 10K
10/01/2006   WEGENER CORP: FILES FORM 10-K/A
10/01/2006   WNC HOUSING TAX CREDIT FUND VI LP SERIES 7: FILES FORM 10-K
10/01/2006   XENOMICS INC: FILES FORM 10KSB/A
11/01/2006   COMPASS BANCSHARES INC: FILES FORM 10-K/A
11/01/2006   CRUZAN INTERNATIONAL, INC.: FILES FORM 10-K
11/01/2006   GREYSTONE LOGISTICS, INC.: FILES FORM 10KSB/A
11/01/2006   HOVNANIAN ENTERPRISES INC: FILES FORM 10-K
11/01/2006   JANEL WORLD TRADE LTD: FILES FORM 10-K
11/01/2006   MERCER INSURANCE GROUP INC: FILES FORM 10-K/A
11/01/2006   ONLINE INNOVATION INC: FILES FORM 10KSB/A

11/01/2006    PEOPLES COMMUNITY BANCORP INC /MD/: FILES FORM ARS
11/01/2006    POZEN INC /NC: FILES FORM 10-K/A
11/01/2006    STOCK MARKET SOLUTIONS INC: FILES FORM 10KSB/A
11/01/2006    UNIVEC INC: FILES FORM 10KSB/A
11/01/2006    VALSPAR CORP: FILES FORM 10-K
11/01/2006    WHOLE FOODS MARKET INC: FILES FORM 10-K/A
12/01/2006    AMERICAN INTERNATIONAL INDUSTRIES INC: FILES FORM 10KSB/A
12/01/2006    AVIATION UPGRADE TECHNOLOGIES INC: FILES FORM 10KSB/A

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01/02/2009    WILLIAMS-SONOMA INCORPORATED: REPORT AND ACCOUNTS 2008/2009
01/02/2009    PHILLIPS-VAN HEUSEN CORPORATION: REPORT AND ACCOUNTS 2008/2009
01/02/2009    PETSMART INCORPORATED: REPORT AND ACCOUNTS 2008/2009
01/02/2009    HOOKER FURNITURE CORPORATION: REPORT AND ACCOUNTS 2009
01/02/2009    HOME DEPOT INCORPORATED: REPORT AND ACCOUNTS 2008/2009
01/02/2009    DUCKWALL-ALCO STORES INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009    ZUMIEZ INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009    WIND RIVER SYSTEMS INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009    WET SEAL INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009    WAL-MART STORES INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009    VIRCO MFG CORPORATION: REPORT AND ACCOUNTS 2008/2009
31/01/2009    ULTA SALON, COSMETICS AND FRAGRANCE INCORPORATED: REPORT AND ACCOUNTS 2
31/01/2009    TWEEN BRANDS INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009    TJX COMPANIES INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009    TITAN MACHINERY INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009    TIFFANY AND COMPANY: REPORT AND ACCOUNTS 2008/2009
31/01/2009    TECH DATA CORPORATION: REPORT AND ACCOUNTS 2009
31/01/2009    TARGET CORPORATION: REPORT AND ACCOUNTS 2008/2009
31/01/2009    TALBOTS INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009    STEIN MART INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009    STAPLES INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009    STAGE STORES INCORPORATED: SUMMARY REPORT AND ACCOUNTS 2008/2009
31/01/2009    SIGMA DESIGNS INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009    SHOE CARNIVAL INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009    SERENA SOFTWARE INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009    SEMTECH CORPORATION: REPORT AND ACCOUNTS 2009
31/01/2009    SEARS HOLDINGS CORPORATION: LETTER TO SHAREHOLDERS 2009
31/01/2009    SEACHANGE INTERNATIONAL INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009    SALESFORCE.COM INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009    SAIC INCORPORATED: SUMMARY REPORT AND ACCOUNTS 2009
31/01/2009    ROSS STORES INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009    REX STORES CORPORATION: REPORT AND ACCOUNTS 2008/2009
31/01/2009    RAVEN INDUSTRIES INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009    QAD INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009    PIMCO STRATEGIC GLOBAL GOVERNMENT FUND INCORPORATED: REPORT AND ACCOU
31/01/2009    PERRY ELLIS INTERNATIONAL INCORPORATED: SUMMARY REPORT AND ACCOUNTS 200
31/01/2009    PEP BOYS MANNY MOE AND JACK: REPORT AND ACCOUNTS 2008/2009
31/01/2009    PACIFIC SUNWEAR OF CALIFORNIA INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009    OXFORD INDUSTRIES INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009    NORDSTROM INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009    NEW YORK AND COMPANY INCORPORATED: REPORT AND ACCOUNTS 2008/2009

31/01/2009     NETEZZA CORPORATION: REPORT AND ACCOUNTS 2009
31/01/2009     MOVADO GROUP INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009     MFRI INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     MET-PRO CORPORATION: REPORT AND ACCOUNTS 2009
31/01/2009     MENTOR GRAPHICS CORPORATION: REPORT AND ACCOUNTS 2009
31/01/2009     MENS WEARHOUSE INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     MACY'S INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     LIMITED BRANDS INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     LAYNE CHRISTENSEN COMPANY: REPORT AND ACCOUNTS 2009
31/01/2009     KROGER COMPANY: REPORT AND ACCOUNTS 2008/2009
31/01/2009     KIRKLAND'S INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     JO-ANN STORES INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009     JC PENNEY COMPANY INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     HIBBETT SPORTS INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009     HASTINGS ENTERTAINMENT INCORPORATED: SUMMARY REPORT AND ACCOUNTS 2008/
31/01/2009     GYMBOREE CORPORATION: REPORT AND ACCOUNTS 2008/2009
31/01/2009     GUESS INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009     G-III APPAREL GROUP LTD: REPORT AND ACCOUNTS 2008/2009
31/01/2009     GENESCO INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009     GAP INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     GAMESTOP CORPORATION: REPORT AND ACCOUNTS 2008/2009
31/01/2009     FRED'S INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     FOREST CITY ENTERPRISES INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     FOOT LOCKER INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     DSW INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     DOLLAR TREE INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     DILLARDS INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     DICK'S SPORTING GOODS INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     COST PLUS INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     COLLECTIVE BRANDS INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     COLDWATER CREEK INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     CITI TRENDS INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     CHICO'S FAS INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     CATO CORPORATION: REPORT AND ACCOUNTS 2008/2009
31/01/2009     CASUAL MALE RETAIL GROUP INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009     C AND D TECHNOLOGIES INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009     BUCKLE INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     BROWN SHOE COMPANY INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     BORDERS GROUP INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     BOOKS-A-MILLION INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009     BON-TON STORES INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     BLYTH INCORPORATED: LETTER TO SHAREHOLDERS 2009
31/01/2009     BJ'S WHOLESALE CLUB INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     BIG LOTS INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     BARNES AND NOBLE INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     AUTODESK INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009     ANNTAYLOR STORES CORPORATION: REPORT AND ACCOUNTS 2008/2009
31/01/2009     AMERICAN INTERNATIONAL GROUP INCORPORATED: REPORT AND ACCOUNTS 2009
31/01/2009     AEROPOSTALE INCORPORATED: REPORT AND ACCOUNTS 2008/2009
31/01/2009     YAYI INTERNATIONAL INC: FILES FORM NT 10-K
30/01/2009     WIRED ASSOCIATES SOLUTIONS INC: FILES FORM NT 10-K
30/01/2009     UNIVERSAL SERVICES GROUP INC /DE/: FILES FORM NT 10-K
30/01/2009     TRIMEDIA ENTERTAINMENT GROUP INC: FILES FORM NT 10-K
30/01/2009     SYNOVICS PHARMACEUTICALS: FILES FORM NT 10-K

30/01/2009 STARTECH ENVIRONMENTAL CORP: FILES FORM NTN 10K
30/01/2009 SKYWORKS SOLUTIONS INC: FILES FORM 10-K/A
30/01/2009 SIGNATURE EYEWEAR INC: FILES FORM NT 10-K
30/01/2009 QUANTUM GROUP INC /FL: FILES FORM NT 10-K

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| Date | Description |
| --- | --- |
| 31/12/2006 | ACHENG RELAY COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | AEROSPACE INFORMATION COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | ALUMINUM CORPORATION OF CHINA LTD: REPORT AND ACCOUNTS 2006 |
| 31/12/2006 | AN HUI SHAN YING PAPER INDUSTRY COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | AN HUI WENERGY COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | ANGANG STEEL COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | ANHUI CONCH CEMENT COMPANY LTD: REPORT AND ACCOUNTS 2006 |
| 31/12/2006 | ANHUI CONCH CEMENT COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | ANHUI EXPRESSWAY COMPANY LTD: REPORT AND ACCOUNTS 2006 |
| 31/12/2006 | ANHUI FANGXING SCIENCE AND TECHNOLOGY COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | ANHUI GOLDEN SEED WINERY COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | ANHUI GUJING DISTILLERY COMPANY LTD: REPORT AND ACCOUNTS 2006 |
| 31/12/2006 | ANHUI HENGYUAN COAL INDUSTRY AND ELECTRICITY POWER COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | ANHUI HUAMAO TEXTILE COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | ANHUI KOYO (GROUP) COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | ANHUI LEIMINGKEHUA COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | ANHUI TONGDU COPPER STOCK COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | ANHUI XINGMA AUTOMOBILE COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | ANYUAN INDUSTRIAL COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | BANK OF OVERSEAS CHINESE: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | BAODING TIANWEI BAOBIAN ELECTRIC COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | BEIHAI GOFAR MARINE BIOLOGICAL INDUSTRY COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | BEIHAI PORT COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | BEIJING AIRPORT HIGH-TECH PARK COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | BEIJING BEIDA JADE BIRD UNIVERSAL SCI-TECH COMPANY LTD: REPORT AND ACCOUNTS 2006 |
| 31/12/2006 | BEIJING CAPITAL INTERNATIONAL AIRPORT COMPANY LTD: REPORT AND ACCOUNTS 2006 |
| 31/12/2006 | BEIJING CAPITAL TOURISM COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | BEIJING CCID MEDIA INVESTMENTS COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | BEIJING DOUBLE-CRANE PHARMACEUTICAL COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | BEIJING HUAER COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |

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| 31/12/2006 | BEIJING JINGKELONG COMPANY LTD: REPORT AND ACCOUNTS 2006 |
| 31/12/2006 | BEIJING JINGNENG THERMAL POWER COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | BEIJING RUITAI HIGH-TEMPERATURE MATERIALS AND TECHNOLOGY COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | BEIJING SL PHARMACEUTICAL COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | BEIJING TEAMSUN TECHNOLOGY COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | BEIJING TIANHONG BAOYE REAL ESTATE COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | BEIJING TONGRENTANG COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | BEIJING WANGFUJING DEPARTMENT STORE (GROUP) COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | BEIJING XIDAN MARKET COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | BEIREN PRINTING MACHINERY HOLDINGS LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | BENGANG STEEL PLATES COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CANAL SCIENTIFIC AND TECHNOLOGICAL COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CAPINFO COMPANY LTD: REPORT AND ACCOUNTS 2006 |
| 31/12/2006 | CCID CONSULTING COMPANY LTD: REPORT AND ACCOUNTS 2006 |
| 31/12/2006 | CENTURY ZHONGTIAN INVESTMENT JOINT STOCK COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHANG JIANG SHIPPING GROUP PHOENIX COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHANG LING (GROUP) COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHANGCHUN DEPARTMENT JITUAN STORE COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHANGCHUN FAW-SIHUAN AUTOMOBILE COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHANGCHUN YIDONG CLUTCH COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHANGSHA LYRUN MATERIAL COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHANGSHA ZOOMLION HEAVY INDUSTRY SCIENCE AND TECHNOLOGY DEVELOPMENT COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHENGDU BOOK DIGITAL COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHENGDU B-RAY MEDIA COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHENGDU DR PENG TECHNOLOGY COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHENGDU HI-TECH DEVELOPMENT COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHENGDU PUTIAN TELECOMMUNICATIONS CABLE COMPANY LTD: REPORT AND ACCOUNTS 2006 |
| 31/12/2006 | CHENGDU XUGUANG ELECTRONICS COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHINA ANIMAL HUSBANDRY INDUSTRY COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHINA BLUECHEMICAL LTD: REPORT AND ACCOUNTS 2006 |
| 31/12/2006 | CHINA CONSTRUCTION BANK CORPORATION: REPORT AND ACCOUNTS 2006 |
| 31/12/2006 | CHINA ENTERPRISE COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |

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| 31/12/2006 | CHINA FIRST PENCIL COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE AND ENGLISH TEXT) |
| 31/12/2006 | CHINA HAISUM ENGINEERING COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHINA JIALING INDUSTRIAL COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHINA KEJIAN COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHINA LIFE INSURANCE COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHINA NATIONAL BUILDING MATERIAL COMPANY LTD: REPORT AND ACCOUNTS 2006 |
| 31/12/2006 | CHINA NATIONAL SOFTWARE AND SERVICE COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) (REVISED) |
| 31/12/2006 | CHINA SATCOM GUOMAI COMMUNICATIONS COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHINA SHIPPING HAISHENG COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHINA SPORTS INDUSTRY GROUP COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHINA UNITED TELECOMMUNICATIONS CORPORATION LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHINA VANKE COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHINA WORLD TRADE CENTER COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHINA WUYI COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHINA-KINWA HIGH TECHNOLOGY COMPANY LTD: REPORT AND ACCOUNTS 2006(CHINESE TEXT) |
| 31/12/2006 | CHONG QING DONG YUAN INDUSTRY DEVELOPMENT COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHONGQING FULING ELECTRIC POWER INDUSTRIAL COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHONGQING GANGJIU COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHONGQING IRON AND STEEL COMPANY LTD: REPORT AND ACCOUNTS 2006 |
| 31/12/2006 | CHONGQING SANXIA PAINTS COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHONGQING TAIJI INDUSTRY (GROUP) COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHONGQING TITANIUM INDUSTRY COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHONGQING YUKAIFA COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | CHUNG HSING ELECTRIC MACHINERY MANUFACTURING COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | DALIAN DAXIAN COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | DALIAN MERRO PHARMACEUTICAL COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | DALIAN REFRIGERATION COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE AND ENGLISH TEXT) |
| 31/12/2006 | DASHANG GROUP COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | DAYING MODERN AGRICULTURE COMPANY LTD: REPORT AND ACCOUNTS 2006 |
| 31/12/2006 | DAZHONG TRANSPORTATION (GROUP) COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | DEHUA TB NEW DECORATION MATERIAL COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | DONGFENG MOTOR GROUP COMPANY LTD: REPORT AND ACCOUNTS 2006 |
| 31/12/2006 | DYMATIC CHEMICALS INC: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | EGUARD RESOURCES DEVELOPMENT COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |

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| 31/12/2006 | FAR EAST INDUSTRIAL STOCK COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | FENGFAN COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |
| 31/12/2006 | FINANCIAL STREET HOLDING COMPANY LTD: REPORT AND ACCOUNTS 2006 (CHINESE TEXT) |

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| 31/12/2008 | AEOLUS TYRE COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | AEROSPACE HI-TECH HOLDING GROUP COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | AEROSUN CORPORATION: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | AIR CHINA LTD: REPORT AND ACCOUNTS 2008 |
| 31/12/2008 | ALLWIN TELECOMMUNICATION COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | ALONG TIBET COMPANY LTD PLC: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | AN HUI WENERGY COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | ANGANG STEEL COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | ANHUI ANNADA TITANIUM INDUSTRY COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | ANHUI BBCA BIOCHEMICAL COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | ANHUI CONCH CEMENT COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | ANHUI EXPRESSWAY COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | ANHUI FENGYUAN PHARMACEUTICAL COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | ANHUI GUJING DISTILLERY COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | ANHUI GUOFENG PLASTIC INDUSTRY COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | ANHUI QUANCHAI ENGINE COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | ANHUI WANWEI UPDATED HIGH-TECH MATERIAL INDUSTRY COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | ANHUI WATER RESOURCES DEVELOPMENT COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | ANXIN TRUST AND INVESTMENT COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | ANYANG IRON AND STEEL INCORPORATED: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | AVIC SANXIN COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BANK OF CHINA LTD: REPORT AND ACCOUNTS 2008 |
| 31/12/2008 | BANK OF COMMUNICATIONS COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BAOJI TITANIUM INDUSTRY COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BAOLILAI INVESTMENT LTD GUANGDONG: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BEIHAI GOFAR MARINE BIOLOGICAL INDUSTRY COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BEIHAI PORT COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BEIJING AIRPORT HIGH-TECH PARK COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BEIJING BDSTAR NAVIGATION COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |

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| 31/12/2008 | BEIJING CAPITAL DEVELOPMENT HOLDING (GROUP) COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BEIJING DOUBLE-CRANE PHARMACEUTICAL COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BEIJING DYNAMIC POWER COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BEIJING HUAYE REALESTATE COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BEIJING NEW BUILDING MATERIALS PLC: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BEIJING SANYUAN FOODS COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BEIJING SHIJI INFORMATION TECHNOLOGY COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BEIJING SL PHARMACEUTICAL COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BEIJING TIANQIAO BEIDA JADE BIRD SCI-TECH COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BEIJING URBAN-RURAL TRADE CENTER COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BEIJING YANJING BREWERY COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BEIJING ZHONG KE SAN HUAN HIGH-TECH COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BEIQI FOTON MOTOR COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BEIREN PRINTING MACHINERY HOLDINGS LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BENGANG STEEL PLATES COMPANY LTD: REPORT AND ACCOUNTS 2008 |
| 31/12/2008 | BLACK PEONY (GROUP) COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BLUE STAR CLEANING COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | BOE TECHNOLOGY GROUP COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CATIC SHENZHEN HOLDINGS LTD: REPORT AND ACCOUNTS 2008 |
| 31/12/2008 | CENTENNIAL BRILLIANCE SCIENCE AND TECHNOLOGY COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHANG JIANG SHIPPING GROUP PHOENIX COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHANGJIANG SECURITIES COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHANGLIN COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHANGSHA ZOOMLION HEAVY INDUSTRY SCIENCE AND TECHNOLOGY DEVELOPMENT COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHENGDE DIXIAN TEXTILE COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHENGDU HUALIAN BUSINESS BUILDING COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHENGDU TIANXING INSTRUMENT AND METER COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHENGDU UNIONFRIEND NETWORK COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHENGSHANG GROUP COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHINA COMMUNICATIONS SERVICES CORPORATION: REPORT AND ACCOUNTS 2008 |
| 31/12/2008 | CHINA COSCO HOLDINGS COMPANY LTD: REPORT AND ACCOUNTS 2008 |
| 31/12/2008 | CHINA CSSC HOLDINGS LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |

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|---|---|
| 31/12/2008 | CHINA FIBERGLASS COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHINA GREATWALL COMPUTER SHENZHEN COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHINA HAISUM ENGINEERING COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHINA INTERNATIONAL MARINE CONTAINERS (GROUP) COMPANY LTD: REPORT AND ACCOUNTS 2008 |
| 31/12/2008 | CHINA LIAONING INTERNATIONAL COOPERATION (GROUP) COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHINA MERCHANTS BANK COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHINA MERCHANTS ENERGY SHIPPING COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHINA MERCHANTS PROPERTY DEVELOPMENT COMPANY LTD: REPORT AND ACCOUNTS 2008 |
| 31/12/2008 | CHINA MERCHANTS PROPERTY DEVELOPMENT COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHINA MOLYBDENUM COMPANY LTD: REPORT AND ACCOUNTS 2008 |
| 31/12/2008 | CHINA NATIONAL MATERIALS COMPANY LTD: REPORT AND ACCOUNTS 2008 |
| 31/12/2008 | CHINA NORTH OPTICAL-ELECTRICAL TECHNOLOGY COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHINA PACIFIC INSURANCE (GROUP) COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHINA PETROLEUM JILIN CHEMICAL ENGINEERING AND CONSTRUCTION COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHINA RAILWAY CONSTRUCTION CORPORATION LTD: REPORT AND ACCOUNTS 2008 |
| 31/12/2008 | CHINA SOUTH LOCOMOTIVE AND ROLLING STOCK CORPORATION LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHINA TELEVISION MEDIA LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHINA TEXTILE MACHINERY COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHINA VANKE COMPANY LTD: REPORT AND ACCOUNTS 2008 |
| 31/12/2008 | CHINA YANGTZE POWER COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHINA ZHENHUA (GROUP) SCIENCE AND TECHNOLOGY COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHONGQING CHANGAN AUTOMOBILE COMPANY LTD: REPORT AND ACCOUNTS 2008 |
| 31/12/2008 | CHONGQING DEPARTMENT STORE COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHONGQING ROAD AND BRIDGE COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHONGQING TITANIUM INDUSTRY COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CHONGQING YUKAIFA COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CITIC SECURITIES COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CITYCHAMP DARTONG COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CNFC OVERSEAS FISHERY COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CNHTC JINAN TRUCK APPLIANCE COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | CNLIGHT COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | COSCO SHIPPING COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |
| 31/12/2008 | DA AN GENE COMPANY LTD OF SUN YAT-SEN UNIVERSITY: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) |

| Date | Description | Document Types |
|---|---|---|
| 31/12/2008 | DAHENG NEW EPOCH TECHNOLOGY INCORPORATED: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) | |
| 31/12/2008 | DALIAN DAYANG TRANDS COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) | |
| 31/12/2008 | DALIAN HUARUI HEAVY INDUSTRY STEEL CASTING COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) | |
| 31/12/2008 | DALIAN JINNIU COMPANY LTD: REPORT AND ACCOUNTS 2008 (CHINESE TEXT) | |
| 31/12/2008 | DALIAN PORT (PDA) COMPANY LTD: REPORT AND ACCOUNTS 2008 | |

**Region: CN,   Period 02, source:  PI-Navigator**

| Date | Description | Document Types |
|---|---|---|
| 30/11/2008 | HYUNDAI PHARMACEUTICAL INDUSTRIAL COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/10/2008 | KOREA TECHNOLOGY INVESTMENT COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/09/2008 | SHINYOUNG WACOAL INCORPORATED: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/09/2008 | PANGRIM COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/09/2008 | KUMBI COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/09/2008 | KOREA SCHNELL PHARMA COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/09/2008 | KOREA RATINGS CORPORATION: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/09/2008 | JOONG ANG ENERVIS COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/09/2008 | INTERM CORPORATION: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/09/2008 | GMP COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/09/2008 | GLOWORKS COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/09/2008 | BTC KOREA COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/09/2008 | ASIA PACIFIC NO 14 SHIP INVESTMENT COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/08/2008 | ASIA PACIFIC NO 15 SHIP INVESTMENT COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 24/07/2008 | PIXELPLUS CO., LTD.: FILES FORM 20-F/A | EDGAR |
| 22/07/2008 | HULIF COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | YANGJISA COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | TPC MECHATRONICS CORPORATION: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | SOLOMON MUTUAL SAVINGS BANK: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | SK TELECOM CO LTD: FILES FORM 20-F | EDGAR |
| 30/06/2008 | SHINSUNG TONGSANG COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | SHINMIN MUTUAL SAVINGS BANK: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | SHINHAN FINANCIAL GROUP CO LTD: FILES FORM 20-F | EDGAR |
| 30/06/2008 | SEWON PRECISION INDUSTRY COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |

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|---|---|---|
| 30/06/2008 | SEOUL MUTUAL SAVINGS BANK: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | SEOJOO TOURIST COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | PUREUN MUTUAL SAVINGS BANK: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | PLUS PROFIT COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | PIXELPLUS CO., LTD.: FILES FORM 20-F | EDGAR |
| 30/06/2008 | NDCORP COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | NAMYEUNG L AND F COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | NAMHAN PAPER COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | MERIDIAN CO LTD: FILES FORM 20-F | EDGAR |
| 30/06/2008 | MANHO ROPE AND WIRE LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | MACROGEN INCORPORATED: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | KT CORP: FILES FORM 20-F | EDGAR |
| 30/06/2008 | KOREA MUTUAL SAVINGS BANK: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | KOREA ELECTRIC POWER CORP: FILES FORM 20-F | EDGAR |
| 30/06/2008 | JINHEUNG MUTUAL SAVINGS BANK COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | JEIL MUTUAL SAVINGS BANK: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | J TUNE ENTERTAINMENT COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | HYOSUNG ONB COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | HEIN I AND C INCORPORATED: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | H K MUTUAL SAVINGS BANK: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | E-GREENERGY COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | CHASYS COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | ASIA PACIFIC NO 12 SHIP INVESTMENT COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 30/06/2008 | ASIA PACIFIC NO 11 SHIP INVESTMENT COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 27/06/2008 | WEBZEN INC: FILES FORM 20-F | EDGAR |
| 27/06/2008 | GRAVITY CO., LTD.: FILES FORM 20-F | EDGAR |
| 25/06/2008 | WOORI FINANCE HOLDINGS CO LTD: FILES FORM 20-F | EDGAR |
| 24/06/2008 | POSCO: FILES FORM 20-F | EDGAR |
| 13/06/2008 | GMARKET INC.: FILES FORM 20-F | EDGAR |
| 31/05/2008 | ASIA PACIFIC NO 13 SHIP INVESTMENT COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/05/2008 | ASIA PACIFIC NO 10 SHIP INVESTMENT COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 28/05/2008 | KOOKMIN BANK: FILES FORM 20-F | EDGAR |
| 16/04/2008 | LG DISPLAY CO., LTD.: FILES FORM 20-F | EDGAR |
| 31/03/2008 | YUYU PHARMA INCORPORATED: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | WOORI INVESTMENT AND SECURITIES COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |

| 31/03/2008 | VITZRO TECH COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
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| 31/03/2008 | URES MERITZ 1ST CR-REIT: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | TONG YANG SECURITIES COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | TAEGU DEPARTMENT STORE COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | SL CORPORATION: REPORT AND ACOCUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | SK SECURITIES LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | SHINYOUNG SECURITIES COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | SAMSUNG SECURITIES COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | SAMSUNG FIRE AND MARINE INSURANCE COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | PUNGKANG COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | OYANG CORPORATION: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | ORIENTBIO INCORPORATED: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | NH INVESTMENT AND SECURITIES COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | MIRAEASSET SECURITIES COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | MERITZ SECURITIES COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | MERITZ INVESTMENT BANK: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | MERITZ FIRE AND MARINE INSURANCE COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | LOTTE NON-LIFE INSURANCE COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | LIG INSURANCE COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | KYOBO SECURITIES COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | KUMHO INVESTMENT BANK COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | KUKJE PHARMA INDUSTRY COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | KOREAN REINSURANCE COMPANY: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | KOREA KOLMAR COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | KOREA INVESTMENT HOLDINGS COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | KOREA DEVELOPMENT FINANCE CORPORATION: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | KOREA CAST IRON PIPE INDUSTRY COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | KOOK JE ELECTRIC KOREA: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | KIWOOM SECURITIES COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | KISHIN CORPORATION: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |

| 31/03/2008 | ILYANG PHARMACEUTICAL COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | ILDONG PHARMACEUTICAL COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | HYUNDAI SECURITIES COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | HYUNDAI MARINE AND FIRE INSURANCE COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | HMC INVESTMENT SECURITIES: REPORT AND ACCOUNTS 2008 (KOREAN TEXT0 | ASIA PAC AR |
| 31/03/2008 | HANYANG SECURITIES COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | HANWHA SECURITIES COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | HANWHA NON-LIFE INSURANCE COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | GREEN NON-LIFE INSURANCE COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |
| 31/03/2008 | GOLDEN BRIDGE INVESTMENT AND SECURITIES COMPANY LTD: REPORT AND ACCOUNTS 2008 (KOREAN TEXT) | ASIA PAC AR |

## FR marking result - US01 XBRL

| Accuracy | Objectivity | Believability | Reputation | Accessibility | Access Security | Relevancy | Value-Added | Timeliness | Completeness | Amount of Data | Interpretability | Ease of Understanding | Concise Representation | Consistent Representation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 6 | 7 | 7 | 6 | 7 | 7 | 3 | 6 | 5 | 7 | 5 | 8 | 7 | 5 |
| 8 | 6 | 7 | 4 | 7 | 3 | 7 | 5 | 6 | 6 | 6 | 3 | 2 | 6 | 6 |
| 3 | 5 | 7 | 7 | 8 | 3 | 7 | 2 | 3 | 4 | 4 | 5 | 7 | 5 | 7 |
| 7 | 8 | 6 | 7 | 8 | 7 | 6 | 6 | 7 | 3 | 7 | 2 | 3 | 4 | 5 |
| 8 | 8 | 6 | 5 | 6 | 6 | 7 | 5 | 3 | 5 | 3 | 7 | 7 | 6 | 5 |
| 4 | 5 | 7 | 7 | 8 | 5 | 8 | 3 | 4 | 7 | 4 | 4 | 3 | 6 | 8 |
| 8 | 7 | 6 | 5 | 6 | 5 | 4 | 5 | 5 | 2 | 3 | 6 | 6 | 6 | 9 |
| 3 | 7 | 5 | 4 | 6 | 5 | 5 | 3 | 6 | 2 | 6 | 3 | 4 | 8 | 5 |
| 3 | 6 | 5 | 5 | 8 | 5 | 6 | 3 | 3 | 2 | 4 | 2 | 5 | 6 | 5 |
| 8 | 5 | 6 | 4 | 7 | 5 | 4 | 3 | 5 | 3 | 7 | 6 | 5 | 5 | 5 |
| 8 | 6 | 6 | 4 | 6 | 7 | 5 | 3 | 6 | 5 | 7 | 7 | 2 | 8 | 7 |
| 8 | 8 | 7 | 7 | 7 | 6 | 8 | 7 | 7 | 7 | 5 | 3 | 4 | 3 | 6 |
| 7 | 7 | 6 | 4 | 7 | 6 | 8 | 7 | 7 | 3 | 6 | 2 | 8 | 5 | 8 |
| 5 | 7 | 5 | 9 | 6 | 3 | 7 | 7 | 3 | 5 | 4 | 2 | 7 | 7 | 9 |
| 5 | 8 | 6 | 9 | 6 | 6 | 6 | 6 | 5 | 3 | 3 | 4 | 8 | 7 | 8 |
| 4 | 8 | 6 | 8 | 8 | 7 | 6 | 2 | 3 | 4 | 4 | 4 | 3 | 7 | 7 |
| 3 | 6 | 5 | 10 | 6 | 3 | 4 | 6 | 5 | 3 | 3 | 6 | 2 | 3 | 6 |
| 4 | 6 | 6 | 5 | 8 | 7 | 4 | 4 | 5 | 4 | 7 | 2 | 2 | 3 | 7 |
| 3 | 5 | 5 | 8 | 7 | 7 | 6 | 3 | 5 | 5 | 8 | 7 | 4 | 7 | 6 |
| 5 | 8 | 7 | 6 | 6 | 7 | 8 | 4 | 4 | 3 | 5 | 3 | 4 | 4 | 6 |
| 7 | 5 | 7 | 8 | 6 | 7 | 5 | 3 | 6 | 7 | 6 | 7 | 5 | 6 | 5 |
| 6 | 7 | 5 | 10 | 6 | 5 | 7 | 7 | 4 | 6 | 5 | 5 | 6 | 5 | 7 |
| 6 | 6 | 5 | 6 | 6 | 3 | 6 | 5 | 3 | 7 | 7 | 4 | 8 | 9 | 9 |
| 8 | 6 | 5 | 6 | 8 | 5 | 5 | 7 | 4 | 5 | 8 | 3 | 7 | 8 | 7 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 7 | 7 | 5 | 7 | 6 | 4 | 6 | 5 | 7 | 6 | 3 | 2 | 7 | 6 |
| 6 | 5 | 7 | 6 | 7 | 3 | 8 | 2 | 7 | 6 | 3 | 6 | 2 | 9 | 7 |
| 8 | 8 | 6 | 6 | 6 | 3 | 6 | 6 | 4 | 4 | 4 | 3 | 2 | 3 | 6 |
| 8 | 6 | 7 | 9 | 8 | 6 | 6 | 7 | 6 | 5 | 5 | 2 | 3 | 4 | 9 |
| 6 | 7 | 7 | 9 | 6 | 7 | 5 | 3 | 4 | 3 | 8 | 7 | 7 | 4 | 8 |
| 6 | 7 | 6 | 7 | 7 | 5 | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 9 | 8 |
| 3 | 5 | 7 | 7 | 6 | 6 | 4 | 7 | 7 | 6 | 3 | 7 | 6 | 3 | 5 |
| 7 | 5 | 6 | 10 | 6 | 7 | 7 | 7 | 7 | 2 | 6 | 3 | 8 | 3 | 7 |
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| 6 | 7 | 7 | 5 | 8 | 6 | 4 | 4 | 4 | 2 | 3 | 2 | 6 | 9 | 4 |
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| 3 | 6 | 6 | 5 | 7 | 3 | 4 | 2 | 6 | 7 | 4 | 7 | 8 | 9 | 6 |
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| 9 | 7 | 6 | 4 | 6 | 6 | 5 | 4 | 7 | 6 | 4 | 2 | 3 | 3 | 7 |
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| 9 | 8 | 6 | 5 | 8 | 7 | 6 | 7 | 3 | 7 | 4 | 6 | 6 | 3 | 5 |
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| 3 | 5 | 7 | 9 | 7 | 3 | 5 | 5 | 5 | 5 | 7 | 6 | 4 | 3 | 6 |
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| 3 | 8 | 5 | 10 | 6 | 7 | 5 | 5 | 4 | 2 | 7 | 6 | 7 | 5 | 7 |
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| 3 | 8 | 6 | 8 | 8 | 6 | 6 | 5 | 6 | 4 | 3 | 5 | 2 | 9 | 6 |
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| 5 | 6 | 5 | 9 | 8 | 7 | 5 | 4 | 3 | 2 | 7 | 4 | 4 | 7 | 6 |
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| 6 | 6 | 7 | 7 | 6 | 3 | 4 | 7 | 3 | 6 | 6 | 6 | 6 | 6 | 4 |
| 3 | 7 | 6 | 10 | 7 | 7 | 8 | 5 | 6 | 6 | 4 | 6 | 7 | 4 | 5 |
| 5 | 8 | 6 | 10 | 6 | 7 | 8 | 4 | 6 | 5 | 3 | 4 | 3 | 6 | 9 |
| 5 | 6 | 7 | 10 | 8 | 4 | 7 | 4 | 4 | 3 | 3 | 6 | 3 | 6 | 5 |
| 3 | 6 | 7 | 4 | 8 | 7 | 8 | 4 | 4 | 2 | 8 | 3 | 4 | 5 | 4 |

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| 4 | 8 | 7 | 6 | 6 | 3 | 8 | 3 | 6 | 4 | 4 | 5 | 3 | 4 | 4 |
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| 5 | 8 | 7 | 7 | 7 | 4 | 6 | 5 | 6 | 6 | 8 | 4 | 4 | 3 | 5 |
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| 6 | 7 | 5 | 5 | 8 | 3 | 7 | 2 | 4 | 7 | 3 | 6 | 7 | 8 | 4 |
| 8 | 7 | 5 | 9 | 7 | 3 | 4 | 5 | 7 | 4 | 4 | 7 | 8 | 3 | 9 |

## FR marking result - US02 XBRL

| Accuracy | Objectivity | Believability | Reputation | Accessibility | Access Security | Relevancy | Value-Added | Timeliness | Completeness | Amount of Data | Interpretability | Ease of Understanding | Concise Representation | Consistent Representation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 8 | 9 | 7 | 8 | 7 | 6 | 3 | 5 | 9 | 9 | 8 | 8 | 6 | 8 |
| 7 | 6 | 8 | 9 | 9 | 6 | 8 | 4 | 4 | 5 | 5 | 8 | 5 | 8 | 10 |
| 7 | 7 | 7 | 6 | 9 | 8 | 6 | 5 | 7 | 4 | 9 | 8 | 9 | 7 | 8 |
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| 10 | 6 | 7 | 6 | 8 | 9 | 5 | 7 | 5 | 8 | 5 | 9 | 6 | 6 | 7 |
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| 10 | 7 | 8 | 10 | 5 | 10 | 7 | 5 | 8 | 8 | 6 | 6 | 5 | 5 | 6 |
| 8 | 8 | 9 | 8 | 5 | 10 | 6 | 3 | 8 | 9 | 10 | 5 | 7 | 8 | 9 |

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| 10 | 7 | 10 | 6 | 6 | 8 | 4 | 7 | 6 | 7 | 7 | 8 | 7 | 6 | 5 |
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| 7 | 8 | 9 | 10 | 7 | 9 | 4 | 5 | 6 | 6 | 7 | 7 | 4 | 6 | 8 |
| 7 | 8 | 9 | 5 | 5 | 8 | 2 | 8 | 8 | 3 | 7 | 5 | 9 | 6 | 7 |
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| 9 | 7 | 7 | 9 | 9 | 6 | 9 | 5 | 8 | 9 | 10 | 8 | 9 | 5 | 5 |
| 8 | 8 | 6 | 8 | 7 | 7 | 5 | 7 | 8 | 4 | 9 | 7 | 7 | 5 | 10 |
| 7 | 7 | 6 | 5 | 5 | 9 | 8 | 5 | 7 | 4 | 5 | 6 | 10 | 8 | 8 |
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| 8 | 9 | 10 | 6 | 6 | 10 | 4 | 4 | 7 | 8 | 7 | 7 | 6 | 5 | 9 |
| 8 | 6 | 6 | 8 | 8 | 9 | 5 | 4 | 7 | 3 | 9 | 5 | 4 | 9 | 6 |

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| 10 | 9 | 7 | 8 | 7 | 10 | 4 | 4 | 5 | 8 | 6 | 7 | 7 | 8 | 7 |
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| 7 | 6 | 9 | 9 | 7 | 10 | 8 | 3 | 8 | 8 | 6 | 6 | 6 | 5 | 6 |
| 8 | 7 | 8 | 10 | 9 | 9 | 4 | 7 | 6 | 4 | 5 | 5 | 7 | 7 | 10 |
| 7 | 9 | 8 | 10 | 5 | 6 | 8 | 7 | 7 | 3 | 5 | 6 | 9 | 6 | 7 |
| 8 | 9 | 10 | 6 | 8 | 10 | 3 | 4 | 4 | 3 | 10 | 8 | 10 | 5 | 8 |
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| 10 | 9 | 6 | 6 | 8 | 7 | 7 | 4 | 6 | 5 | 10 | 8 | 7 | 9 | 8 |
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| 10 | 7 | 6 | 10 | 9 | 7 | 5 | 3 | 8 | 4 | 8 | 5 | 4 | 6 | 7 |
| 10 | 9 | 10 | 7 | 5 | 9 | 5 | 3 | 6 | 9 | 9 | 7 | 7 | 6 | 10 |

## FR marking result - CN01 XBRL

| Accuracy | Objectivity | Believability | Reputation | Accessibility | AccessSecurity | Relevancy | Value-Added | Timeliness | Completeness | Amount of Data | Interpretability | Ease of Understanding | Concise Representation | Consistent Representation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 10 | 5 | 7 | 9 | 4 | 3 | 1 | 6 | 4 | 4 | 2 | 5 | 2 | 7 |
| 10 | 8 | 8 | 9 | 6 | 2 | 7 | 5 | 5 | 4 | 2 | 6 | 1 | 2 | 3 |
| 9 | 8 | 8 | 8 | 2 | 2 | 2 | 4 | 5 | 4 | 2 | 2 | 2 | 1 | 7 |
| 8 | 10 | 3 | 8 | 8 | 4 | 5 | 3 | 2 | 1 | 1 | 5 | 5 | 3 | 7 |
| 9 | 7 | 7 | 6 | 7 | 1 | 6 | 5 | 3 | 1 | 1 | 3 | 5 | 4 | 3 |
| 7 | 8 | 5 | 6 | 3 | 1 | 5 | 1 | 3 | 5 | 3 | 6 | 4 | 2 | 6 |
| 7 | 10 | 3 | 6 | 5 | 2 | 5 | 5 | 3 | 1 | 2 | 2 | 1 | 6 | 5 |
| 7 | 9 | 3 | 7 | 4 | 1 | 7 | 1 | 2 | 2 | 3 | 4 | 4 | 1 | 6 |
| 9 | 10 | 7 | 6 | 3 | 4 | 2 | 1 | 3 | 2 | 3 | 4 | 1 | 3 | 6 |
| 7 | 7 | 5 | 9 | 4 | 5 | 2 | 4 | 2 | 4 | 3 | 5 | 5 | 5 | 3 |
| 7 | 7 | 6 | 8 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 6 | 3 | 6 | 7 |
| 8 | 9 | 7 | 7 | 3 | 1 | 4 | 5 | 5 | 2 | 2 | 5 | 3 | 2 | 3 |
| 7 | 10 | 7 | 6 | 2 | 3 | 6 | 1 | 2 | 4 | 3 | 3 | 1 | 3 | 6 |
| 10 | 8 | 9 | 6 | 7 | 2 | 6 | 2 | 2 | 4 | 3 | 4 | 2 | 5 | 6 |
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| 7 | 9 | 6 | 9 | 3 | 4 | 5 | 4 | 5 | 5 | 2 | 3 | 3 | 5 | 5 |
| 7 | 8 | 7 | 6 | 5 | 1 | 2 | 1 | 6 | 1 | 2 | 3 | 2 | 2 | 4 |
| 9 | 8 | 6 | 6 | 5 | 2 | 4 | 4 | 4 | 1 | 1 | 6 | 3 | 1 | 7 |

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| 10 | 10 | 7 | 9 | 2 | 1 | 5 | 2 | 2 | 1 | 1 | 6 | 4 | 2 | 8 |
| 7 | 8 | 8 | 8 | 9 | 3 | 4 | 3 | 2 | 1 | 4 | 5 | 5 | 3 | 3 |
| 8 | 7 | 3 | 8 | 6 | 2 | 2 | 4 | 2 | 1 | 1 | 2 | 1 | 3 | 5 |
| 10 | 7 | 4 | 8 | 7 | 3 | 2 | 2 | 4 | 2 | 3 | 5 | 3 | 4 | 8 |
| 10 | 9 | 3 | 6 | 2 | 4 | 5 | 2 | 4 | 5 | 3 | 5 | 1 | 1 | 8 |
| 10 | 10 | 7 | 8 | 4 | 3 | 3 | 4 | 5 | 4 | 1 | 6 | 3 | 2 | 5 |
| 7 | 10 | 3 | 7 | 2 | 5 | 4 | 5 | 2 | 3 | 4 | 2 | 1 | 6 | 3 |
| 10 | 8 | 9 | 8 | 2 | 4 | 3 | 2 | 5 | 5 | 1 | 2 | 3 | 5 | 6 |
| 9 | 8 | 5 | 6 | 7 | 4 | 5 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 7 |
| 9 | 7 | 5 | 6 | 2 | 3 | 3 | 1 | 6 | 4 | 3 | 2 | 3 | 3 | 5 |
| 7 | 8 | 9 | 8 | 2 | 5 | 2 | 3 | 2 | 2 | 4 | 4 | 5 | 1 | 8 |
| 8 | 7 | 4 | 7 | 5 | 3 | 2 | 1 | 2 | 5 | 1 | 3 | 3 | 3 | 5 |
| 9 | 10 | 9 | 9 | 9 | 2 | 6 | 1 | 2 | 4 | 2 | 3 | 4 | 2 | 4 |
| 8 | 7 | 3 | 6 | 4 | 2 | 6 | 1 | 4 | 2 | 2 | 3 | 1 | 5 | 8 |
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| 7 | 10 | 4 | 8 | 4 | 1 | 5 | 1 | 3 | 1 | 2 | 3 | 2 | 4 | 7 |
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| 10 | 7 | 8 | 9 | 3 | 4 | 4 | 5 | 5 | 3 | 3 | 3 | 2 | 3 | 7 |
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| 8 | 9 | 9 | 9 | 2 | 3 | 7 | 3 | 5 | 3 | 2 | 4 | 2 | 4 | 8 |
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| 7 | 7 | 3 | 6 | 7 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 4 | 2 | 4 |
| 8 | 7 | 7 | 9 | 3 | 1 | 6 | 3 | 2 | 4 | 3 | 2 | 4 | 5 | 4 |
| 7 | 8 | 6 | 6 | 2 | 2 | 3 | 2 | 2 | 4 | 4 | 6 | 2 | 3 | 6 |
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| 9 | 10 | 3 | 9 | 6 | 1 | 7 | 1 | 4 | 1 | 2 | 4 | 4 | 2 | 3 |
| 7 | 7 | 5 | 7 | 3 | 4 | 2 | 5 | 2 | 1 | 3 | 5 | 1 | 3 | 5 |
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| 9 | 8 | 6 | 9 | 5 | 4 | 2 | 2 | 3 | 2 | 2 | 5 | 3 | 6 | 8 |

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| 9 | 9 | 6 | 9 | 4 | 2 | 6 | 5 | 4 | 1 | 2 | 6 | 1 | 1 | 6 |
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## FR marking result - CN02 XBRL

| Accuracy | Objectivity | Believability | Reputation | Accessibility | AccessSecurity | Relevancy | Value-Added | Timeliness | Completeness | Amount of Data | Interpretability | Ease of Understanding | Concise Representation | Consistent Representation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 7 | 9 | 6 | 9 | 9 | 5 | 8 | 7 | 3 | 7 | 5 | 6 | 6 | 9 |
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| 10 | 8 | 10 | 6 | 9 | 5 | 9 | 8 | 6 | 5 | 9 | 8 | 9 | 8 | 7 |
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| 7 | 6 | 8 | 7 | 9 | 7 | 6 | 7 | 6 | 9 | 7 | 7 | 7 | 7 | 8 |
| 9 | 4 | 5 | 7 | 8 | 9 | 8 | 7 | 8 | 10 | 9 | 6 | 10 | 5 | 9 |

| Accuracy | Objectivity | Believability | Reputation | Accessibility | Access Security | Relevancy | Value-Added | Timeliness | Completeness | Amount of Data | Interpretability | Ease of Understanding | Concise Representation | Consistent Representation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 4 | 9 | 6 | 7 | 4 | 8 | 9 | 9 | 5 | 6 | 7 | 8 | 5 | 7 |
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| 8 | 6 | 6 | 7 | 8 | 6 | 5 | 7 | 6 | 6 | 9 | 8 | 9 | 4 | 6 |
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| 7 | 8 | 5 | 8 | 7 | 6 | 7 | 5 | 8 | 6 | 6 | 6 | 10 | 4 | 9 |

## FR marking result - KR XBRL

| Accuracy | Objectivity | Believability | Reputation | Accessibility | Access Security | Relevancy | Value-Added | Timeliness | Completeness | Amount of Data | Interpretability | Ease of Understanding | Concise Representation | Consistent Representation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 5 | 8 | 6 | 10 | 3 | 9 | 2 | 10 | 6 | 3 | 8 | 8 | 9 | 8 |
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| 9 | 6 | 9 | 7 | 5 | 5 | 8 | 5 | 8 | 8 | 3 | 5 | 5 | 4 | 9 |
| 6 | 5 | 7 | 6 | 9 | 4 | 6 | 4 | 4 | 8 | 8 | 6 | 8 | 2 | 9 |
| 8 | 7 | 9 | 8 | 10 | 2 | 5 | 3 | 10 | 5 | 4 | 8 | 5 | 5 | 10 |
| 8 | 6 | 8 | 4 | 6 | 2 | 7 | 5 | 8 | 9 | 7 | 5 | 8 | 6 | 4 |
| 9 | 7 | 9 | 7 | 7 | 7 | 9 | 4 | 3 | 9 | 10 | 7 | 6 | 5 | 9 |
| 10 | 6 | 7 | 7 | 8 | 2 | 6 | 2 | 8 | 9 | 9 | 5 | 8 | 8 | 10 |
| 9 | 7 | 9 | 5 | 9 | 6 | 9 | 2 | 5 | 9 | 10 | 5 | 4 | 4 | 8 |
| 7 | 5 | 8 | 7 | 9 | 6 | 9 | 4 | 10 | 7 | 9 | 7 | 5 | 7 | 3 |
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| 6 | 5 | 7 | 7 | 5 | 7 | 8 | 2 | 3 | 7 | 5 | 5 | 4 | 5 | 3 |
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| 7 | 6 | 9 | 4 | 9 | 5 | 9 | 2 | 7 | 7 | 4 | 5 | 5 | 7 | 10 |
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| 8 | 6 | 8 | 6 | 6 | 5 | 7 | 2 | 3 | 6 | 8 | 9 | 5 | 8 | 10 |
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| 10 | 8 | 9 | 6 | 8 | 2 | 4 | 4 | 10 | 5 | 10 | 6 | 8 | 5 | 9 |
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| 8 | 8 | 7 | 5 | 9 | 6 | 7 | 5 | 6 | 7 | 6 | 5 | 4 | 3 | 10 |
| 10 | 6 | 7 | 7 | 7 | 7 | 3 | 4 | 7 | 8 | 8 | 5 | 4 | 2 | 4 |
| 8 | 6 | 9 | 8 | 7 | 6 | 4 | 2 | 7 | 4 | 6 | 6 | 6 | 4 | 7 |

## *Appendix D. Members of the XBRL Organization by Industry*

| Financial Services and Information Providers | Professional Services |
|---|---|
| Asian Securities Printing | Audicon Gmblt |
| Aspect Financial Pty Ltd. | Audit New Zealand |
| Australian Stock Exchange | BDO Seidman, LLP |
| Bank of America | Bowne & Co., Inc. |
| Bank of Toyko | Bryant College |
| Business Wire | CCC Consulting |
| Deutsche Borse AG | ChuoAoyama Audit Corporation |
| Deutsche Bundesbank | Croner CCH Ltd. |
| EDGAR Online Inc. | Crowe Chizek and Do., LLP |
| EStilil Co., Ltd. | Deloitte & Touche, LLP |
| Federal Deposit Insurance Corporation | EDP Audit Pool |
| Fitch Ratings, Ltd. | Ernst & Young, LLP |
| General Electric Corp. | FIO Consulting Pty Ltd. |
| Hermes Risk Mang. Gmblt | Grant Thornton, LLP |
| Informatica Corp. | Haarmann, Hemmelrath & Partner |
| Information Mang. Australia Pty Ltd. | ICC Ltd. |
| | ICPAs |

| | |
|---|---|
| Information Services Int. | Korea Assn for CFOs |
| Inland Revenue Department | KPMG Financial |
| Inland Revenue, UK | KPMG, LLP |
| Moody's Risk Management Services, Inc. | Practitioners Publishing Company |
| Morgan Stanley | PricewaterhouseCoopers, LLP |
| NASDAQ | Pro Management Automatisering B.V. |
| National Center of Charitable Statistics | PWC Deutsche Revision AG |
| NEC Crop. | R.R. Donnelley Financial |
| New Zealand Stock Exchange | Takara Printing |
| Nihon Keizai Shimbun, Inc. | The Woodburn Group |
| OneSource Information Services | Thomson Financial |
| Optima Co., Ltd. | Tohmatsu & Co. |
| Quick Corp. | Tokyo Shoho Research |
| Reserve Bank of New Zealand | University of Auckland |
| Reuters Data LLC | University of Birmingham |
| Reuters Japan Ltd. | |
| RIA | |
| Royal Bank of Canada | |
| Sumitomo Mitsui Banking Crop. | |
| Toronto Stock Exchange | |

| Technology Enablers | |
|---|---|
| Beacon It | MediaFusion Co., Ltd. |
| Capital Printing Systems Inc. | Microsoft Business Solutions |
| CaseWare International Inc. | Microsoft Corp. |
| Creative Solutions | MIS Deutschland GmbH |
| DATEV e.G | Mondial Software, Ltd. |
| DecisionSoft Ltd. | Nomura Research Institute, Ltd. |
| Diginotar | NOVAA |
| Digital Notarization Authority | NTT Data Corporation |
| Diva Corp. | Oracle Corp. |
| Eagle Enterprises, Ltd. | PCA Software |
| Eagle Technology Mang. Inc. | PeopleSoft |
| Financial Reporting Solutions | S & N AG |
| Fujitsu Prime Software Technologies Ltd. | SAP AG |
| Fujitsu Research Institute | Schleupen AG |
| Fujitsu System Solutions Ltd. | Semansys Technologies |
| Gerling NCM | Shin Nihon & Co. |
| Hitachi | Software AG |
| Hitachi Corp. System and Services | Solution6 |
| Hypoerion Solutions Corp. | SRA |
| I-Lumen, Inc. | Standard Advantage |
| InnoData GmbH | Task Technology |
| Innovision | Time Base Pty. Ltd. |

| | |
|---|---|
| J3 Technology | TKC Corp. |
| Japan Information Service Ind. Assoc. | Toshiba Corp. |
| JD Edwards & Co. | Toyo Keizai, Inc. |
| Jiji Press Ltd. | Tsikoku Databank, Ltd. |
| Lawson Software | UB Matrix |
| Matsushita Elec. Ind. Co., Ltd. | XBI Software Inc. |

| Accounting and Trade Organizations | Government and Not-for-Profit |
|---|---|
| AICPA (U.S.) | Deutsche Bank AG |
| CGAA (Canada) | Federal Deposit Insurance Corporation |
| CICA (Canada) | Office of the Sup of Financial Inst. in Canada |
| CPA (Australia) | Statistics Canada |
| ICAA (Australia) | Statistics New Zealand |
| ICAA (New Zealand) | U.S. Census Bureau |
| ICAEW (U.K.) | U.S. Dept. of Defense |
| ICCA (Ireland) | |
| IMA (U.S.) | |
| JICPA (Japan) | |
| NIVRA (Netherlands) | |

| Other | |
|---|---|
| Acumen Alliance | Fujitsu Fip Corp. |
| AECA | Fujitsu Laboratories of America, Inc. |
| Antenna House | Fujitsu Ltd. |
| ANZ | Intuit K.K. Village |
| Asahi & Co. | IRM Pty Ltd. |
| Bayerische Hypo-und Vereinsbank | Miroku Jyoho Service Co., Ltd. |
| Bearing Point Co., Ltd. | National Center for Charitable Statistics |
| BearingPoint | Nihombashi Corp. |
| Bendevi, John | Nihon Intersystems Co., Ltd. |
| College belastingadviseurs | NIVRA |
| Companies Office in New Zealand | P S Calvert |
| Corel Pty Ltd. | PBSG AG |
| Deutsche Borse AB | Pitcher Partners |
| Deutsches Rechnungslegungs Standard | PR Newswire |
| DVFA GmbH | Roadshow Ltd. |
| Export Development Corp.-Canada | Visionart, Inc. |
| | Westpac |

(Source: Higgins and Harrell 2003-2012)