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## XBRL (Extensible Business Reporting Language): A Research Perspective

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## ABSTRACT

XBRL (Extensible Business Reporting Language) is going to revolutionize the business reporting. It will make sharing, communicating, transporting, and accessing of information much more efficient and cost effective without any human interaction and irrespective of computer platform. Also, the XBRL technology will eliminate human-caused errors when typing and retyping information for sharing, reporting, and decision making purposes. In this paper we provide a brief introduction to the XBRL technology and summarize the research findings related to the following topics: value of XBRL and XBRL formatted reports, transparency and corporate governance, and assurance on XBRL instance documents. Also, we provide a list of research opportunities in the XBRL domain.

# XBRL (Extensible Business Reporting Language): A Research Perspective

## 1. INTRODUCTION

The main objective of this paper is to provide an overview of the current status of the research in the XBRL arena. In addition, it explores the opportunities for future research with special attention to the value of XBRL-formatted financial statements, transparency and corporate governance, and assurance on XBRL instance documents furnished with the Securities and Exchange Commission (SEC) in the United States of America, along with the traditional filings. The acronym XBRL stands for Extensible Business Reporting Language. About ten years ago the concept of XBRL was conceived by Charles Hoffman, a CPA in the state of Washington, USA. Since then it has grown to become a global phenomenon. Currently the XBRL-adopting countries include Australia, Belgium, Canada, China, Denmark, France, Germany, Greece, India, Ireland, Israel, Japan, Korea, Luxembourg, the Netherlands, New Zealand, Norway, Singapore, Spain, Sweden, Thailand, United Kingdom, and the United States of America (XBRL International 2009, see also Debreceeny et al 2009).

Basically, XBRL, as a technology, enables business information to be electronically shared, communicated, interpreted, and reused without human interventions. XBRL International (2009) defines XBRL as:

a language for the electronic communication of business and financial data which is revolutionizing business reporting around the world. It provides major benefits in the preparation, analysis and communication of business information. It offers cost savings, greater efficiency and improved accuracy and reliability to all those involved in supplying or using financial data.

Just as HTML<sup>1</sup> (Hyper Text Markup Language) is the foundation for Web pages and the World Wide Web (Web), which revolutionized the Internet, XBRL will revolutionize the use of business information through the Internet and other digital media. HTML was developed for formatting the display of information (content), while XBRL, a derivative of XML<sup>2</sup> (Extensible Markup Language), is being developed not just for displaying the information but also for maintaining the context of the information. Although searching for information on the Web is very fast, without relevant context, the bulk of information is useless and cannot be used without human intervention. For example, if a person searches for “IBM property, plant and equipment” on Google, he/she may get several thousand hits in a fraction of a second (4,350 hits were obtained in 0.49 seconds). That is, the Google search engine found 4,350 different sites/documents that contain the words “IBM property, plant and equipment” in 0.49 seconds. This undeniably is a very fast search, but the bulk of information is of no use if we want to know the actual dollar value of “Property, Plant and Equipment” on IBM’s balance sheet. On the other hand, XBRL enables the search of content with context. That is, if IBM had its balance sheet in XBRL format in accordance with the XBRL taxonomy, then automated searches for “property, plant, and equipment” on its balance sheet would be easy. Ideally, in the future, instead of just getting links to sites where one or more of the words “IBM property, plant and equipment” exist; we could obtain the actual answer to the question "what was IBM’s property, plant and equipment for 2008?”

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<sup>1</sup> HTML uses predefined tags to display, in certain ways on the web, the contents that are being tagged. For example, a tag in HTML to bold the statement “I am a teacher” is represented by the letter ‘b’ with angle brackets around it, <b> representing the opening tag and </b> representing the closing tag. Thus, the tagged text <b>I am a teacher</b> when displayed on the web will appear bold as “**I am a teacher**”.

<sup>2</sup> XML (<http://www.W3C.org>) is used for both the content and context. Under XML, the tags are defined by the users. You can assign any name you want but you have to follow the same style as in the HTML of putting the name enclosed in angle brackets. For example, <name>John Doe</name> represents the tagged name of John Doe with an opening tag <name> and a closing tag </name> with the value of the tag sandwiched between the opening and closing tags. There are some requirements that must be met in naming a tag (<http://www.W3C.org>).

There are numerous articles both technical and non-technical (e.g., see Debreceeny and Gray. 2001, Engel et al 2003, Vasal and Srivastava 2002), currently available which introduce XBRL technology. However, for the convenience of readers, we provide a brief introduction to XBRL in the next section. Although XBRL started as a technology to tag relevant business information contained in a business report, it has gone beyond just creating a tagged report. The real power of XBRL technology is in tagging every piece of information relevant to business process whether it deals with acquisitions, productions, human resource management, or accounting. XBRL-GL (XBRL Global Ledge) does exactly that. This will be further elaborated in the next section.

While the original XBRL International (<http://www.xbrl.org>) started with 12 members (Vasal and Srivastava 2002), currently it has grown to some 550 members (Callaghan and Nehmer 2009). It is a not-for-profit organization. Its organizational structure is comprised of local jurisdictions which represent countries, regions or international bodies and it focuses on the progress of XBRL in constituting jurisdictions, as well as contributing to international development. While the XBRL International is involved in developing technical standards for XBRL, the individual jurisdictions such as XBRL-US is responsible for developing XBRL taxonomy and the corresponding schemas based on US GAAP (see XBRL US 2009a, 2009b for the current US GAAP taxonomy). The XBRL India is responsible for developing the taxonomy based on Indian GAAP ([www.XBRLIndia.com](http://www.XBRLIndia.com)). In fact, the Indian Institute of Chartered Accountants of India (ICAI) issued the Exposure Draft of General Purpose Financial Reporting XBRL Taxonomy for Commercial and Industrial Companies (ICAI 2008) and had requested public comments by October 2008. It is interesting to see that the drive for XBRL came

originally from practice, however a handful of researchers have taken keen interest in exploring the value of XBRL and related issues from a research perspective.

Starting June 2009, about top 500 publicly held companies in the USA are being required by the SEC to furnish their reports in XBRL format, along with filing the reports in the traditional format (SEC 2008). The requirement by the SEC has increased interest among the academic researchers to explore the issues related to XBRL more critically.

This paper is divided into five sections. Section 2 provides a brief description of the XBRL technology. Section 3 highlights some of the research being done related to the value of XBRL and XBRL-formatted reports, transparency and corporate governance, and assurance on XBRL instance documents. Section 4 is devoted to describing various research opportunities in the XBRL arena. Finally, Section 5 provides a summary and conclusions.

## **2. XBRL TECHNOLOGY**

As mentioned earlier, XBRL (Extensible Business Reporting Language) is an XML-based language for reporting about business activities through the digital media. XBRL defines syntax for business reporting. This syntax provides a way by which a “fact” relevant to a business decision or activity can be reported as the value of a well-defined concept within a particular context. For example, “Accounts Receivable” is a well-defined concept in financial accounting - a line item on the balance sheet of almost every business entity. This business concept has a value or “fact” associated with it. This “fact” represents the value in that account. Let us assume that this value is \$2,101 for the year ending December 31, 2008. The XBRL syntax maps this concept (accounts receivable) and value (\$2,101) in such a way that software not only can extract this information but also can interpret it without any human intervention. There are several issues that the XBRL syntax has to accommodate in order for the “fact” related

to a business “concept” to be interpreted correctly without the human intervention. As one can see, the above example of accounts receivable value (balance) has the following related pieces of information:

- The balance in the accounts receivable account is \$2,101.
- The above value represents the balance as of December 31, 2008.
- The balance is represented in US Dollars.
- The accounts receivable balance is a line item on the balance sheet of a certain business entity.
- The name of the account “Accounts Receivable” is in English language.
- There may be some additional information pertaining to this account that the company would like to disclose through a footnote. For example, what if the company has sold the accounts receivables at a discount and does not have the right to collect? How will this information be disclosed using XBRL?
- “Accounts Receivable” represents part of current assets.
- “Accounts Receivable” balance of \$2,101 is measured using US Generally Accepted Accounting Principles (US-GAAP).

If a person knowledgeable about US-GAAP reads the value of \$2,101 in “Accounts Receivable” on the balance sheet of a company for the year ended December 31, 2008, he/she will interpret it correctly, keeping in mind the entire context (e.g., the business entity, time, amount, unit, related disclosures, relevant accounting principle, etc.). However, for computer software to interpret the above number correctly within its entire context without human intervention, XBRL language has to be “rich,” which has been a challenge for the XBRL International. The first version of XBRL taxonomy that was published in July 2001 (Bovee et al 2002) was the initial attempt to develop such a language. The subsequent modifications of the XBRL Specifications (Versions 2.0, and 2.1, see Engel et al 2003, and also XBRL US 2009a,

2009b) have provided much richer taxonomy frameworks that incorporate almost the entire business context as mentioned above.

### ***XBRL Framework***

The XBRL framework consists of two components: XBRL taxonomies and XBRL instance documents. The XBRL framework defines a syntax through which a business fact can be reported as the value of a well defined reporting concept within a particular context. The syntax enables software to efficiently and reliably find, extract, interpret, and use those facts for the purpose of analyzing the data and preparing a report. According to XBRL 2.1 Specification, “A taxonomy is comprised of an XML Schema [SCHEMA-1] and all of the linkbases contained in that schema or directly referenced by that schema. The XML Schema is known as a taxonomy schema.” In other words, XBRL taxonomy is made up of a group of interrelated XML files: XML Schema files and Linkbase files.

### ***XBRL Schema***

The XBRL taxonomy schema defines the actual concepts (elements) that form the basis of the taxonomy. It stores their names, data types, period type, how they can be utilized, etc. For example, consider a concept “Cash and Cash Equivalents” on the balance sheet of a company. This concept is defined in the XBRL Schema file (with .xsd extension) and is given a name which forms one of the elements of the XBRL taxonomy. The Schema file also defines: (1) the data type, whether “Cash and Cash Equivalents” is a monetary item, a non-monetary item, or a string, (2) balance type, whether the normal balance of “Cash and Cash Equivalent” is debit or credit, (3) the period type, whether the value of “Cash and Cash Equivalents” is defined for a period or at an instant of time, etc. The properties of schema elements are defined in the XBRL 2.1 Specification. Usually, there are several XBRL Schema files defining elements in various



domains. For example, currently under the US taxonomy, in addition to the schema pertaining to financial reporting, we have several other schemas. For example, we have one schema for elements dealing with accountants report, and one dealing with management report.

### ***XBRL Linkbases***

The linkbase files further document the meaning of the concepts by expressing relationships between concepts or inter-concepts and by relating concepts to their documentation.

There are five linkbase files under XBRL Spec. 2.1.

1. The label linkbase allows the user to attach human readable labels with different roles and languages to a given concept.
2. The reference linkbase allows the user to attach external information (authoritative sources) to concepts.
3. The presentation linkbase defines how concepts are nested and ordered.
4. The calculation linkbase defines how values of concepts should, for example, sum up from one to another.
5. The definition linkbase allows the user to define additional semantics and relationships.

### ***Dimensions***

The Dimensions concept was first introduced by the XBRL international in 2006 through the publication “XBRL Dimensions 1.0 Conformance Suite” by Hernández-Ros and Wallis (2006), which can be accessed from <http://www.xbrl.org/Specification/XDT-REC-2006-09-18.htm>. Basically, it was introduced to accommodate reporting of a business concept through various dimensions such as by regions, by products, or by segments. The original version of XBRL 2.1 taxonomy was “uni-dimensional,” The introduction of Dimensions makes the taxonomy multi-dimensional and very convenient for reporting the business information by various dimensions. For example, suppose a business entity has sales information by geographical regions, by product lines, and by segments. Using the Dimensions feature of

XBRL, the entity can create an XBRL instance document of this information. From this instance document, computer software can create reports or display the information quickly by geographical regions, by product lines and by segments. We advise readers to see Hernández-Ros and Wallis (2006) for technical details.

### ***XBRL Taxonomy***

The XBRL taxonomy consists of the vocabulary items representing the business facts. These vocabulary terms are stored at some location for reference purposes. For example, US-GAAP taxonomy is stored at the following website: <http://xbrl.us/us-gaap/2008-03-12>. The example of a taxonomy vocabulary representing the concept “Cash and Cash Equivalent” in US-GAAP taxonomy is the element <us-gaap:cashCashEquivalents> . The prefix “us-gaap:” before the element name “cashCashEquivalents” defines the name uniquely. If the same name means different things in different taxonomies, using a prefix helps identify it uniquely. The element “Cash and Cash Equivalents” is a monetary item, normally has a debit balance, and its value represents the balance as of a given instant of time. Such properties of an XBRL element are expressed in terms of attributes of the element in XBRL. For example, some of attributes of the element “us-gaap:CashCashEquivalents” are “Data Type” with the value “monetary”, “Balance Type” with a value “Debit” and “Period Type” with a value “Instant”. The attribute “Data Type” can also take values such as “String” or “Share” and the “Balance Type” attribute can also take “Credit” value. Some monetary items are given for a period rather than an instant of time. Thus, “Period Type” attribute can also take “Duration” as a value.

In addition to the basic attributes, each element has a set of defined relationships with the taxonomy *linkbases*. The element “**cashCashEquivalents**” is related to a human readable label “Cash and Cash Equivalents” through *Label Linkbase*. The *Reference Linkbase* is used to

provide a reference to an authoritative literature (SEC) pertaining to the element. The *Presentation Linkbase* provides a hierarchy of presentation of the elements. For example, “Cash and Cash Equivalent” is presented before “Accounts Receivable Trade, Net,” and “Inventory, Net.” The *Calculation Linkbase* shows the computational relationships among the elements. For example, it establishes that “Cash and Cash Equivalents,” “Accounts Receivable Trade, Net.” and “Inventory, Net” add to “Total Current Assets.”

### ***Extension Taxonomy***

One of the most powerful and versatile aspects of XBRL is taxonomy extensibility. This allows a given taxonomy to refer to other taxonomies and to define its own set of relationships and information (presentation, calculation, labels, etc.) around those taxonomies, in addition to adding new unique elements in the extension schema itself. In other words, there may be situations where the standard taxonomy may not contain certain specific concepts that need to be reported through the instance document. These concepts may be specific to an industry or a company. In such situations, one needs to define these concepts by creating the XBRL Schema file and the corresponding Linkbase files. Although the XBRL-US has developed industry specific taxonomies for the following industries (see <http://xbrl.us/taxonomies/Pages/US-GAAP2009.aspx> for details): Banking and Savings, Brokers and Dealers, Commercial and Industrial, Insurance, and Real Estate, there are still many unique situations that require extension taxonomies. For example, an airline company may have a current asset account named “Jet-way Landing Rights.” This account represents the future rights of the airline to land at a certain airport. This concept is not defined in the current version of the US-GAAP taxonomies. In such a situation, the airline company has to define the concept “Jet-way Landing Rights”

along with the data type, period type, balance type, etc. through the XBRL Schema and Linkbase files.

### **XBRL Instance Document**

The XBRL instance document is the business facts represented in the XBRL format. The main function of the instance document is to store financial data tagged with elements from a referenced taxonomy (containing element definitions and Meta data) for reporting and decision making purposes. In addition to presenting business “facts,” the instance document presents some additional information that is used to describe the facts, such as the name of the entity, period, measurement unit, precision or accuracy in terms of number decimal points, and whether the financial statement being reported is actual or budgeted. Also, the instance document provides reference to other files on definition of business concepts, relationships with other concepts, GAAP, footnotes, professional publications, human readable labels of business concepts, and presentation styles. As mentioned above, an instance document contains a *unit* for each type of measured data tagged. Currencies and shares are the most common examples of units of measure in Financial Reporting.

Once an XBRL Instance Document and an Extension Taxonomy are created, they can then be securely located on the Internet or an Intranet for consumption. Figure 1 presents the 2008 Balance Sheet for Microsoft Corporation fetched from the annual report 10K filed with the SEC through FRAANK<sup>3</sup> and Figure 2 represents part of the XBRL Instance Document created by FRAANK for the balance sheet in Figure 1. An end-user can access the Instance Document via the Internet and load it in XBRL enabled software. The information then can be analyzed,

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<sup>3</sup> FRAANK technology has been developed at the Ernst & Young Center for Auditing Research and Advanced Technology at the University of Kansas, Lawrence, Kansas, USA (see Bovee et al 2005 for details). FRAANK fetches 10K and 10Q from the SEC Edgar database, parses the balance sheets, income statements, and cash flow statements, and tags them using the XBRL 2.1 taxonomy.

compared and rendered (presented in a document form) using a variety of methods. (See Engel et al. (2003) for more details.)

### **XBRL – General Ledger (XBRL-GL)**

In principle, XBRL – GL (2006) is designed to tag all the information relevant to a business process. For example, to tag the information on a receiving report, one has to design a taxonomy that would map all the relevant information on the receiving report such as the name of the buying entity, the vendor's name, date of good(s) ordered, the type of good(s) received, the date received, who authorized the purchase, who received it, what amount and in what condition the goods were received, etc. XBRL-GL uses the XBRL 2.1 specifications. An instance document under XBRL-GL, for example of the receiving report, is a tagged document of all the information on the receiving report under XBRL-GL. The XBRL-GL provides disaggregated information. Once this information is aggregated, especially the accounting information, one would obtain the final account balances. Thus, as Alles and Piechocki (2009) point out, XBRL-GL establishes the linkage between the XBRL for financial reporting in the form of drill-ups.

### **Value of XBRL**

Since the business information is tagged using XBRL taxonomy, processing, analyzing, and disseminating information become much more efficient and effective. Software can capture information and use it again and again in different applications without the need to re-key the information. Also, the XBRL tagged information can be shared among different computer platforms (e.g., PC and Mac) without any concerns. This has several kinds of advantages. Not re-keying the information leads to efficiency and effectiveness and eliminates chances of

introducing additional errors and, hence, leads to more accurate and reliable information available for business decisions.

Usually businesses have to generate various kinds of reports, some for internal usage and some for external purposes, such as regulatory filings, tax filings, printed financial statements, and posting information on the website. Currently, most businesses are achieving this task by manually aggregating information from the accounting systems, adding text and third party information in various combinations. This process is costly, slow, and prone to processing and re-keying errors. XBRL tagged information can be used centrally to create multiple types of reports just by using software and, hence, reducing redundancy, re-keying errors, and processing errors. One can easily integrate ERP systems such as People Soft or Oracle with the XBRL taxonomy, create instance documents, and use software like Hyperion to produce various reports such as financial statements, earnings releases, and regulatory reports efficiently and cost effectively.

XBRL enables information to be easily available to all users irrespective of whether they are professional users or naïve users. This, in principle, increases transparency of the business information. Thus, XBRL will make it easy for businesses to comply with the regulatory reporting requirements. For example, in the US, complying with the Fair Disclosure Regulation (Regulation FD) as required by the SEC would be simple if the information is already tagged. SEC adopted Regulation FD on August 15, 2000 (see SEC 2000 for details). According to the Regulation FD, when an issuer of security discloses material, non-public information to certain individuals or entities (generally, security market professionals, such as stock analysts), the issuer must make a timely public disclosure of that information. The main purpose of this new

rule is to promote the full and fair disclosure of information. The XBRL technology would help in the process.

Another advantage of XBRL tagged information is in using automated software for analyzing business information. For example, auditors, both internal and external, can use such tools to analyze financial and non-financial information to determine any unusual pattern in the business operation and to take corrective actions. Lenders can use such analytical tools to determine credit worthiness of borrowers. Another advantage is that these analytical tools can be used through the Internet from remote locations, further reducing the cost of processing.

### **3. RESEARCH RELATED TO XBRL**

In this section, we summarize the current status of the research related to XBRL, with particular emphasis on the following topics: Value of XBRL Formatted Financial Statements, Transparencies and Corporate Governance, Assurance on XBRL Instance Document.

#### **Value of XBRL Formatted Statements and Firm Characteristics**

While the XBRL-formatted financial statements under the SEC requirement are not currently available until the middle of June 2009, researchers have analyzed the data available from the SEC voluntary program. In order to understand and evaluate the issues involved in creating XBRL-formatted financial statements, the SEC started a voluntary filer program (VFP) in April 2005. According to Tan and Shon (2009), currently, there are about 125 firms which have voluntarily submitted over 540 filings to the SEC in XBRL format since the inception of VFP program. Tan and Shon (2009) analyze the VFP filings and demonstrate that the VFP firms tend to be more profitable firms with varying degrees of growth potential compared to a matched sample of non-XBRL filing firms. Furthermore, they find that subsequent to filing for the first time in XBRL, VFP firms experience an increase in analyst following and trading activity in

their stocks. This is an interesting result; it re-enforces the notion that XBRL increases transparency and promotes efficient consumption of financial data.

Hodge et al. (2004) performed an experiment with 96 second-year MBA students as surrogates for nonprofessional financial statement users to investigate whether using an XBRL-enhanced search engine helps nonprofessional financial statement users acquire and integrate related financial information when making an investment decision. In particular, they investigate the search capability of XBRL-formatted financial information in the context of recognition versus disclosure of stock option compensation. According to Statement of Financial Accounting Standard (SFAS) No. 123, *Accounting for Stock-Based Compensation* (FASB 1995), managers are allowed to either recognize the fair value of stock option compensation in the income statement as an expense or disclose this information in the footnotes. Using the disclosure approach makes the reported income higher than the income reported under the recognition approach. However, if the investor integrates the information in the footnote with the information in the income statement then he/she should come to the same conclusion. However, research indicates that financial statement users react more to the recognized information than to the disclosed information (e.g., see Hirst and Hopkins 1998, see also Hodge et al 2004 for more detailed references).

Hodges et al (2004, p. 687) experiment revealed interesting results:

“... many users do not access the technology, but those who do use it are better able to acquire and integrate information. Specifically, we find that when stock option accounting varies between firms, the use of an XBRL-enhanced search engine increases the likelihood that individuals acquire information about stock option compensation disclosed in the footnotes.”

They also conclude that individuals who used the XBRL search engine technology to integrate the information had different investment decisions compared to individuals who did not use the technology. Furthermore they observe that “... search-facilitating technologies, such as XBRL,



aid financial statement users by improving the transparency of firms' financial statement information and managers' choices for reporting that information (p. 687)."

Pinsker and Wheeler (2009) investigate the relationship between XBRL use and perception by nonprofessional investors. They use 61 MBA students as proxies for non-professional investors. Their findings indicate that "while perceptions of XBRL are generally positive, increased use of XBRL leads to more positive perceptions." They further assert that "organizations promoting the spread of XBRL should consider making access to XBRL analysis tools as easy and widely available as possible. Additionally, organizations that issue XBRL-formatted reports are perceived more positively than ones that do not issue such reports (a halo effect)."

### **Transparencies and Corporate Governance**

The following statement by Cox, Chairman of SEC, makes clear the value of XBRL in terms of providing transparency of the information disclosed (Block and Orol 2007).

"Once real-time disclosure was combined with interactive data ... we began to find clues that had previously gone undetected. That led directly to the discovery of what we now know were billions of dollars of backdated stock option awards."

Roohani (2007) argues in his paper about how XBRL would facilitate corporate governance and provide transparency to employees, investors and creditors, and regulators. Alles and Piechocki (2009) examine the question whether XBRL will improve corporate governance. They develop a framework for understanding how tagged data can be used to change the way in which decisions affecting governance are made. They argue that:

for XBRL to fundamentally change governance it has to add more value than simply facilitating data exchange. The information value chain analysis indicates that new ways of viewing and manipulating data yield better information, which when combined with more powerful analytic tools leads to the knowledge that

allows better decision making about governance. Hence, the value added from XBRL comes from using it as a tool to disaggregate and reformat data so that users, by seeing problems in a new way, are stimulated to generate new information and knowledge.

The above perspective has significant implications for XBRL. The use of XBRL-GL will meet the above challenge and facilitate a systematic examination of how data can be used in governance decision making.

Premuroso and Somnath (2008) examine whether early and voluntary filers of financial information in XBRL format demonstrate superior corporate governance and operating performance relative to their non-adopting peers. Their findings suggest a positive association between corporate governance and the firms who have participated in the SEC voluntary XBRL filing program. They also find that “firm performance factors including liquidity and firm size are also associated with the early and voluntary XBRL filing decision.”

### **Assurance on XBRL Instance Document**

Although the SEC (2008) is requiring XBRL formatted reports to be furnished by top 500 public companies in the USA starting middle of June 2009 along with its traditional filings, it is not requiring that these XBRL-formatted reports be audited by a third party for its true representation of the ASCII/HTML report filed with the SEC. The only requirement is that these reports should look like the one submitted in traditional format when viewed through the SEC viewer. In addition, the SEC (2008, p. 19) asserts that data in the interactive data file submitted to SEC would be:

“protected from liability for failure to comply with the proposed tagging and related requirements, if the interactive data file either

- Met the requirements, or
- Failed to meet those requirements, but failure occurred despite the issuer’s good faith and reasonable effort, and the issuer corrected the failure as soon as reasonably practical after becoming aware of it.”

However, without assurance on the XBRL-formatted reports, it seems there would be a low level of confidence on the fairness of the information obtained from the XBRL-formatted document. Recently, Srivastava and Kogan (2008) have argued that:

“while waiving the assurance requirements and providing liability protection for XBRL filings is a very significant relief to the SEC filers, and will moderate their resistance to this new filing requirement, this is a short-time band-aid that has to be eliminated sooner rather than later, as more and more financial statement users will start tying their systems to the “interactive data” in XBRL provided online by the SEC. Since “interactive data” is designed to be automatically utilized by computers without human intervention and for various purposes, it will completely replace the standard format data in most applications, and, thus, has to be assured to be relied on.”

PricewaterhouseCoopers has performed an assurance service on the United Technologies Corporation’s (UTC) instance document, but they do not describe their methodology (Boritz and No 2007). Boritz and No perform a mock audit of the 10Q XBRL instance document of UTC to indentify issues and difficulties involved in the assurance process. In their audit process, Boritz and No primarily trace every item in the paper version to the XBRL instance document and every item from the XBRL document to the paper version. They spent about 63 hours completing the task and concluded that they had high assurance that “the 10-Q XBRL-Related Documents were a *complete* and *accurate* reflection of UTC’s 10-Q.” The question still remains what constitutes a *complete* and *accurate* reflection or “true representation” of UTC’s 10-Q. Plumlee and Plumlee (2008) describe the process of how an XBRL instance document is created and discuss the issues involved in providing assurance on XBRL instance documents. However, they do not provide any conceptual framework for performing an audit of the XBRL instance document.

Srivastava and Kogan (2008) develop a conceptual framework for providing assurance on XBRL instance document, especially for the purpose of furnishing the XBRL version of financial statements along with the traditional reports. In the process of generating a set of

assertions, they assume that the traditional format statements have been audited in accordance with the current requirements, and can be relied on as a benchmark for comparison. However, when the traditional format financial statements are phased out, and the XBRL version becomes the main (and only) format of the SEC filings, Srivastava and Kogan (2008) contend that framework will have to be revisited to be merged into the statutory audit methodology.

According to Srivastava and Kogan (2008), the main assertion for providing assurance on the XBRL instance document under the SEC requirement, is that “the XBRL instance document is a true representation of the electronic document (ASCII or HTML) filed with the SEC.” They propose three sets of assertions for the main assertion to be true. The first set is derived from the possible data deficiencies in the XBRL instance document and is presented below:

**Completeness:** the XBRL instance document has no omissions of relevant facts / data from the traditional format document. A violation of this assertion would occur if, for example, a line item on the traditional balance sheet, such as accounts receivable value, is omitted from the XBRL instance document.

**Existence:** the XBRL instance document has no insertions of facts / data not present in the traditional format document. A violation of this assertion would occur if, for example, a piece of information, such as an element describing the amount of accounts receivable for the current quarter is present in the XBRL instance document, while the audited financial statement does not provide it.

**Accuracy:** All element values and / or attribute values (such as context, unit, etc.) on the XBRL instance document accurately represent the facts in the traditional format document. Thus, this assertion has two sub-assertions: **Element Accuracy**, and **Attribute Accuracy**. A violation of this assertion would occur, if, for example, element values and / or attribute values (such as context, unit, etc.) are in error. An example of an erroneous element value would be the XBRL instance document describing the amount of accounts receivable for the current quarter as \$50,000.00 while the audited financial statement showing this amount to be \$60,000.00. An example of an erroneous attribute value would be a wrong contextRef value that misidentifies \$50,000.00 as the amount of accounts receivable for the current quarter, while the traditional format document states that it is actually for the previous quarter.

The second set of assertions is based on the possible deficiencies of the mark-up in the XBRL instance document. These assertions are described below:

**Well-formedness:** The XBRL instance document is well-formed, i.e., it complies with all XML syntax rules. A violation of this assertion would be an erroneous tagging of data that violates XML syntax rules. For example, a missing closing tag such as </AccounsReceivable> would make the XBRL instance document severely deficient.

**Validity:** The XBRL instance document is valid, i.e., it complies with all rules of XBRL and referenced XBRL taxonomies. A violation of this assertion would be an erroneous tagging of data that violates XML Schema. For example, an element with a missing required attribute such as unitRef would be a violation.

**Proper Representation:** The XBRL tagging in the instance document properly represents the facts in the traditional format document. A violation of this assertion is an inappropriate choice of XBRL element to tag traditional format document datum. For example, the accounts receivable balance for the current quarter on the traditional report is tagged as <currentAssets>.

The third set of assertions is based on possible deficiencies of XBRL taxonomies used by the filer. These assertions are described below:

**Proper Taxonomies:** The XBRL instance document references appropriate general and industry-specific XBRL taxonomies. A violation of this assertion would be an improper choice of general and industry-specific XBRL taxonomies by the filer. For example, in place of using the approved US GAAP-Insurance XBRL taxonomy, the filer has used the US GAAP - Commercial and Industrial XBRL taxonomy.

**Valid Taxonomy Extensions:** the XBRL taxonomy extensions referenced by the XBRL instance document are valid, i.e., they comply will all rules of XML and XBRL. An example of violation of this assertion would be a taxonomy extension element that does not have a required attribute.

**Proper Extension Elements:** the new elements in the XBRL taxonomy extensions referenced by the XBRL instance document are introduced appropriately. An example of violation of this assertion would be an introduction of an extension element called <InsuranceReceivable> in place of the standard element <PremiumsReceivable> in the US GAAP - Insurance XBRL taxonomy.

**Proper Linkbases:** the linkbases in the XBRL taxonomy extensions referenced by the XBRL instance document are appropriate. Inappropriate / erroneous linkbases in XBRL taxonomy extensions (including the choice of inappropriate/misleading labels) would be a violation of this assertion.

Similar to the traditional audit, the above assertions would provide a structured approach to audit an XBRL instance document. The assurance provider can obtain relevant items of

evidence pertaining to each assertion; evaluate them individually for the level of support he/she gets from each item of evidence for the corresponding assertion. Next, the assurance provider can aggregate all the items of evidence to determine the overall confidence whether all the assertions are met. Depending on the level of support for each assertion, the assurance provider may decide to collect more evidence, propose correction to the instance document, qualify the opinion, or give a clean opinion. Just for illustration purposes, Srivastava and Kogan (2008) provide a list of specific audit procedures pertaining to each assertion. Such a list would make the audit process more efficient and effective compared to an approach which is ad hoc with no conceptual framework.

#### **4. RESEARCH OPPORTUNITIES**

There are a lot of opportunities for conducting research in the XBRL arena. Discussed below is a list of research ideas which is by no means an exhaustive list.

- *Development of intelligent footnote taxonomy:* Currently, the SEC requires tagging of footnotes as a block. It would be highly desirable to have a footnote taxonomy that is structured in such a way that searching for information related to certain issues such as, litigations, punitive damages, law suites, etc., become easy.
- *Mapping of taxonomy in one jurisdiction to the taxonomy in another jurisdiction:* Such a mapping is of a great value when the business entity is filing its reports to two or more stock exchanges with different GAAPs. For example, if an Indian company has to file its report to two regulatory agencies, such as, the SEBI (Securities and Exchange Bureau of India) following the Indian GAAP, and to the SEC following the US GAAP, wouldn't it be efficient and cost effective to create a mapping of the two taxonomies? If such a mapping were available, then by the push of a button the company can create the two

reports. Of course, it cannot be done by just using the XBRL taxonomy at the final report level; it needs to be done at the XBRL-GL level.

- *Mapping of taxonomy elements from one language to another language.* Mapping of taxonomy elements from one language to another language will allow users to view the report in whatever language they would like. Such an approach would be useful in involving common people to participate in the stock market. Stock exchanges should provide resources to develop such mappings. This will increase participation in trading stocks listed at these stock exchanges.
- *Robustness of various taxonomies:* It is important to make sure that various taxonomies are robust in mapping the relevant business concepts. Such a study should include all taxonomies: taxonomies related to but not limited to accounting elements contained in the financial statements, taxonomy related to footnotes, related to disclosures and related to other business processes, such as acquisition, production, distribution, etc.
- *Development of taxonomy for risk assessment:* There would be a tremendous need of models for assessing risks in the XBRL environment. We need to build taxonomies for assessing risks such as business risk, financial risk, and fraud risk. This would be a two step process. First, one has to develop a risk assessment model and validate its reliability and identify the relevant input variables. Next, one has to design the corresponding taxonomy, if not already present, to tag those input variables to the model.
- *Behavioral Research in XBRL Arena:* There are tremendous opportunities for behavioral research from studying the impact of XBRL technology on the behavior of decision makers, such as the ease and convenience of use or the accuracy of the decisions.

- *Use of XBRL in Auditing:* This would include how and where all XBRL and XBRL-GL can be used in the traditional audit to make the process more efficient and effective.
- *Use of XBRL and XBRL-GL in Continuous Monitoring and Continuous Auditing:* This would include how one can use XBRL and XBRL-GL to monitor business processes on a continuous basis to determine the effectiveness of the control processes on a timely basis. Also, how can we use the XBRL technology for continuous auditing?

## **5. SUMMARY**

In conclusion, we have introduced the basics of XBRL technology and how it would benefit the process of reporting, sharing, aggregating, and transporting of business information efficiently and effectively. We have also discussed the current status of research related to XBRL technology. In particular, we have paid special attention to the research related to 1) Value of XBRL-Formatted Statements and Firm Characteristics, 2) Transparencies and Corporate Governance, and 3) Assurance on XBRL Instance Document. Finally, we provide a list of research ideas in the XBRL domain. Of course, this list by no means is an exhaustive list.



## REFERENCES

- Alles, M., and M. Piechocki. (2009). Will XBRL Improve Corporate Governance? A Framework for Enhancing Governance Decision Making Using Tagged Data. Presented at 4<sup>th</sup> International Conference at The University of Kansas, Lawrence, KS, April 24-25.
- Block, D., and R. Orol. (2007). Cox: 'Heroes' Armed With Tech Lead Backdating Crackdown. <http://www.law.com/jsp/article.jsp?id=1171287469693> (last accessed on May 23,2009).
- Boritz, J. E., and W. G. No. (2007). *Auditing an XBRL Instance Document: The Case of United Technologies Corporation*. Working paper, University of Waterloo.
- Bovee, M., M. Ettredge, R. P. Srivastava, and M. Vasarhelyi. (2002). Does the Year 2000 XBRL Taxonomy Accommodate Current Business Financial Reporting Practice? *Journal of Information Systems*, Vol. 16, No. 2, 165-182.
- Bovee, M., A. Kogan, R. P. Srivastava, M. A. Vasarhelyi, and K. M. Nelson. (2005). Financial Reporting and Auditing Agent with Net Knowledge (FRAANK) and eXtensible Business Reporting Language (XBRL). *Journal of Information Systems*, Vol. 19, No. 1 (Spring), 19-41.
- Callaghan, J, and R. Nehmer. (2009). Financial and Governance Characteristics of Voluntary XBRL Adopters in the US. Presented at 4<sup>th</sup> International Conference at The University of Kansas, Lawrence, KS, April 24-25.
- Debreceeny, R., S. Farewell, and N. Kido. (2009). Interacting with Interactive Data: The Effects of Interface and Context on Mapping Financial Statement Elements to the XBRL U.S. GAAP Taxonomy. Presented at 4<sup>th</sup> International Conference at The University of Kansas, Lawrence, KS, April 24-25.
- Debreceeny, R., and G. L. Gray. (2001). The production and use of semantically rich accounting reports on the Internet: XML and XBRL. *International Journal of Accounting Information Systems*, Vol. 2, No. 1, 47-74.
- Engel, P., Hamscher, W., Shuetrim, G., Kannon, D. V., and Wallis, H. (2003). Extensible Business Reporting Language (XBRL) 2.1, XBRL International, 2003, <http://www.xbrl.org/Specification/XBRL-RECOMMENDATION-2003-12-31+Corrected-Errata-2005-11-07.rtf> (last accessed on May 23, 2009).
- Financial Accounting Standards Board (FASB). (1995). *Accounting for Stock Based Compensation. Statement of Financial Accounting Standards No. 123*. Stamford, CT.
- Hernández-Ros, I., and H. Wallis. (2006). XBRL Dimensions 1.0. available from <http://www.xbrl.org/Specification/XDT-REC-2006-09-18.htm> (last accessed on May 23, 2009).

- Hirst, D., and P. Hopkins. (1998). Comprehensive income reporting and analysts' valuation judgments. *Journal of Accounting Research* 36 (Supplement), 47–75.
- Hodge, F. D., J. J. Kennedy, and L. A. Maines. (2004). Does search-facilitating technology improve the transparency of financial reporting? *The Accounting Review* 79 (3), 687-703.
- Institute of Chartered Accountants of India (ICAI). 2008. Exposure Draft of General Purpose Financial Reporting XBRL Taxonomy for Commercial and Industrial Companies. Available from [http://www.icai.org/post.html?post\\_id=3424](http://www.icai.org/post.html?post_id=3424).
- Premuroso, R. F., and Bhattacharya, S. (2008). Do Early and Voluntary Filers of Financial Information in XBRL Format Signal Superior Corporate Governance and Operating Performance? *International Journal of Accounting Information Systems*, 9, 1 - 20.
- Pinsker, R., and P. Wheeler. (2009). Nonprofessional Investors' Perceptions of the Efficiency and Effectiveness of XBRL-enabled Financial Statement Analysis and of Firms Providing XBRL-formatted Information. Presented at 4<sup>th</sup> International Conference at The University of Kansas, Lawrence, KS, April 24-25.
- Plumlee, D., and M. Plumlee. (2008). Assurance on XBRL for Financial Reporting. *Accounting Horizons*, Vol. 22, No. 3, 353–368.
- Roohani, S. (2007). XBRL: Meeting Challenges of Corporate Governance Reporting and Documentation. Presented at 2007 International Conference at The University of Kansas, Lawrence, KS, May 11-12.
- Security and Exchange Commission (SEC). (2000). Fair Disclosure, Regulation FD. Available from <http://www.sec.gov/rules/final/33-7881.htm>.
- Security and Exchange Commission (SEC). (2008). *Proposal: Interactive Data to Improve Reporting*. SEC, Washington, DC.
- Srivastava, R. P., and A. Kogan. (2008). Assurance on XBRL Instance Document: A Conceptual Framework of Assertions. Working Paper, School of Business, University of Kansas, U. S. A.
- Tan, C., and J. Shon. (2009). XBRL and its financial reporting benefits: Capital market evidence. Presented at 4<sup>th</sup> International Conference at The University of Kansas, Lawrence, KS, April 24-25.
- Vasal, V. K., and R. P. Srivastava. (2002). eXtensible Business Reporting Language (XBRL) – The Digital Language of Business: An Indian Perspective. *Indian Accounting Review*, Vol. 6, No. 1, June 2002, 41-59.
- XBRL GL. (2006). XBRL GL Key Features. <http://www.xbrl.org/GLKeyFeatures/> (last accessed on May 23, 2009).

XBRL International (2009). What is XBRL?. <http://www.xbrl.org/WhatIsXBRL/> (last accessed on May 23, 2009).

XBRL US. (2009a). *U.S. GAAP Taxonomies 1.0 and Supporting Documentation*. Available from <http://www.xbrl.us/Pages/US-GAAP.aspx>.

XBRL US. (2009b). *XBRL U.S. GAAP Taxonomy Preparers Guide*. Available from [www.xbrl.us/Documents/PreparersGuide.pdf](http://www.xbrl.us/Documents/PreparersGuide.pdf) (last accessed on May 23, 2009).

**Figure 1: 2008 Balance Sheet of Microsoft Corporation fetched from the 10K filed with the SEC (Security and Exchange Commission) using FRAANK Technology (Bovee e. at. 2005).**

Microsoft Internet Explorer window showing the FRAANK application interface. The address bar displays the URL: [http://fraank.eycarat.ku.edu/cgi-bin/vml/working/lc/get\\_Report.pl?rep=http://www.sec.gov/Archives/edgar/data/789019/000119312508162768/0001193125-08-162768.txt07312008MICROSOFT\\_CORP&xbrl=1&html=1&SIC=7372](http://fraank.eycarat.ku.edu/cgi-bin/vml/working/lc/get_Report.pl?rep=http://www.sec.gov/Archives/edgar/data/789019/000119312508162768/0001193125-08-162768.txt07312008MICROSOFT_CORP&xbrl=1&html=1&SIC=7372)

Navigation menu on the left:

- Balance Sheet
- Income Statement
- Cash Flow
- Non Financial
- 404 Reports
- XBRL INSTANCE
- Financial Ratios

Table Data (In millions):

	2008	2007
<b>ASSETS</b>		
Cash and cash equivalents	\$ 10,339	\$ 6,111
Short-term investments (including securities pledged as collateral of \$2,491 and \$2,356)	13,323	17,300
Total cash, cash equivalents, and short-term investments	23,662	23,411
Accounts receivable, net of allowance for doubtful accounts of \$153 and \$117	13,589	11,338
Inventories	985	1,127
Deferred income taxes	2,017	1,899
Other	2,989	2,393
Total current assets	43,242	40,168
Property and equipment, net of accumulated depreciation of \$6,302 and \$5,016	6,242	4,350
Equity and other investments	6,588	10,117
Goodwill	12,108	4,760
Intangible assets, net	1,973	878
Deferred income taxes	949	1,389
Other long-term assets	1,691	1,509
<b>Total assets</b>	<b>\$ 72,793</b>	<b>\$ 63,171</b>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
<b>Current liabilities:</b>		
Accounts payable	\$ 4,034	\$ 3,247
Accrued compensation	2,934	2,325
Income taxes	3,248	1,040
Short-term unearned revenue	13,397	10,779
Securities lending payable	2,614	2,741
Other	3,659	3,622
Total current liabilities	29,886	23,754
Long-term unearned revenue	1,900	1,867
Other long-term liabilities	4,721	6,453
Commitments and contingencies		
<b>Stockholders' equity:</b>		
Common stock and paid-in capital – shares authorized 24,000; outstanding 9,151 and 9,380	62,849	60,557
Retained deficit, including accumulated other comprehensive income of \$1,140 and \$1,654	(26,563)	(29,460)
<b>Total stockholders' equity</b>	<b>36,286</b>	<b>31,097</b>
<b>Total liabilities and stockholders' equity</b>	<b>\$ 72,793</b>	<b>\$ 63,171</b>

See accompanying notes.  
<FONT

**Figure 2: Instance Document of 2008 Balance Sheet in the annual report 10K of Microsoft filed with the SEC.**

The screenshot shows a web browser window with the following content:

**Navigation Menu (Left):**

- MICROSOFT CORP
- 07-31-2008
- Balance Sheet
- Income Statement
- Cash Flow
- Non Financial
- 404 Reports
- XBRL INSTANCE
  - [INSTANCE DOCUMENT]
  - [CALCULATION LINKBASE]
  - [PRESENTATION LINKBASE]
  - [LABEL LINKBASE]
  - [SCHEMA LINKBASE]
- Financial Ratios

**XML Code (Right):**

```
<?xml version="1.0" ?>
<!-- Created by KU-ZBRL 2.1-Convertor -->
- <xbrl:xbrl xmlns:us-gaap="http://xbrl.us/us-gaap/2008-03-31" xmlns:link="http://www.xbrl.org/2003/linkbase"
  xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:KU="http://fraank.eycarat.ku.edu" xmlns:xbrli="http://www.xbrl.org/2003/instance"
  xmlns:iso4217="http://www.xbrl.org/2003/iso4217" xmlns:xbrldi="http://xbrl.org/2006/xbrldi">
  <link:schemaRef xlink:type="simple" xlink:href="07312008MICROSOFT_CORP.xsd" />
  - <xbrli:context id="FY2006_i">
  - <xbrli:entity>
    <identifier scheme="http://sec.gov/CIK" xmlns="http://www.xbrl.org/2003/instance">789019</identifier>
    </xbrli:entity>
  - <xbrli:period>
    <xbrli:instant>2006-06-30</xbrli:instant>
    </xbrli:period>
  </xbrli:context>
  - <xbrli:context id="FY2007_i">
  - <xbrli:entity>
    <identifier scheme="http://sec.gov/CIK" xmlns="http://www.xbrl.org/2003/instance">789019</identifier>
    </xbrli:entity>
  - <xbrli:period>
    <xbrli:instant>2007-06-30</xbrli:instant>
    </xbrli:period>
  </xbrli:context>
  - <xbrli:context id="FY2008_i">
  - <xbrli:entity>
    <identifier scheme="http://sec.gov/CIK" xmlns="http://www.xbrl.org/2003/instance">789019</identifier>
    </xbrli:entity>
  - <xbrli:period>
    <xbrli:instant>2008-06-30</xbrli:instant>
    </xbrli:period>
  </xbrli:context>
  - <xbrli:context id="FY2006">
  - <xbrli:entity>
    <identifier scheme="http://sec.gov/CIK" xmlns="http://www.xbrl.org/2003/instance">789019</identifier>
    </xbrli:entity>
  - <xbrli:period>
    <xbrli:startDate>2006-06-30</xbrli:startDate>
    <xbrli:endDate>2006-06-30</xbrli:endDate>
    </xbrli:period>
  </xbrli:context>
  - <xbrli:context id="FY2007">
```

Microsoft Internet Explorer window showing the XBRL Instance Document for Microsoft Corp. 07-31-2008. The page title is "MICROSOFT CORP 07-31-2008". The left sidebar contains a navigation menu with the following items:

- Balance Sheet
- Income Statement
- Cash Flow
- Non Financial
- 404 Reports
- XBRL INSTANCE
  - [INSTANCE DOCUMENT]
  - [CALCULATION LINKBASE]
  - [PRESENTATION LINKBASE]
  - [LABEL LINKBASE]
  - [SCHEMA LINKBASE]
- Financial Ratios

The main content area displays the XBRL Instance Document XML code, which includes the following elements and values:

```

- <xbri:unit id="decimal">
  <xbri:measure>iso4217:USD</xbri:measure>
</xbri:unit>
- <xbri:unit id="shares">
  <xbri:measure>xbri:shares</xbri:measure>
</xbri:unit>
<us-gaap:CashAndCashEquivalentsAtCarryingValue decimals="-6" contextRef="FY2008_i" unitRef="USD">10339000000</us-gaap:CashAndCashEquivalentsAtCarryingValue>
<us-gaap:CashAndCashEquivalentsAtCarryingValue decimals="-6" contextRef="FY2007_i" unitRef="USD">6111000000</us-gaap:CashAndCashEquivalentsAtCarryingValue>
<us-gaap:ShortTermInvestments decimals="-6" contextRef="FY2008_i" unitRef="USD">13323000000</us-gaap:ShortTermInvestments>
<us-gaap:ShortTermInvestments decimals="-6" contextRef="FY2007_i" unitRef="USD">17300000000</us-gaap:ShortTermInvestments>
<us-gaap:CashCashEquivalentsAndShortTermInvestments decimals="-6" contextRef="FY2008_i" unitRef="USD">23662000000</us-gaap:CashCashEquivalentsAndShortTermInvestments>
<us-gaap:CashCashEquivalentsAndShortTermInvestments decimals="-6" contextRef="FY2007_i" unitRef="USD">23411000000</us-gaap:CashCashEquivalentsAndShortTermInvestments>
<us-gaap:AccountsReceivableNetCurrent decimals="-6" contextRef="FY2008_i" unitRef="USD">13589000000</us-gaap:AccountsReceivableNetCurrent>
<us-gaap:AccountsReceivableNetCurrent decimals="-6" contextRef="FY2007_i" unitRef="USD">11338000000</us-gaap:AccountsReceivableNetCurrent>
<us-gaap:InventoryNet decimals="-6" contextRef="FY2008_i" unitRef="USD">9850000000</us-gaap:InventoryNet>
<us-gaap:InventoryNet decimals="-6" contextRef="FY2007_i" unitRef="USD">11270000000</us-gaap:InventoryNet>
<us-gaap:DeferredTaxAssetsNetCurrent decimals="-6" contextRef="FY2008_i" unitRef="USD">2017000000</us-gaap:DeferredTaxAssetsNetCurrent>
<us-gaap:DeferredTaxAssetsNetCurrent decimals="-6" contextRef="FY2007_i" unitRef="USD">1899000000</us-gaap:DeferredTaxAssetsNetCurrent>
<us-gaap:OtherAssetsCurrent decimals="-6" contextRef="FY2008_i" unitRef="USD">2989000000</us-gaap:OtherAssetsCurrent>
<us-gaap:OtherAssetsCurrent decimals="-6" contextRef="FY2007_i" unitRef="USD">2393000000</us-gaap:OtherAssetsCurrent>
<us-gaap:AssetsCurrent decimals="-6" contextRef="FY2008_i" unitRef="USD">43242000000</us-gaap:AssetsCurrent>
<us-gaap:AssetsCurrent decimals="-6" contextRef="FY2007_i" unitRef="USD">40168000000</us-gaap:AssetsCurrent>
<us-gaap:PropertyPlantAndEquipmentNet decimals="-6" contextRef="FY2008_i" unitRef="USD">6242000000</us-gaap:PropertyPlantAndEquipmentNet>
<us-gaap:PropertyPlantAndEquipmentNet decimals="-6" contextRef="FY2007_i" unitRef="USD">4350000000</us-gaap:PropertyPlantAndEquipmentNet>
<us-gaap:LongTermInvestments decimals="-6" contextRef="FY2008_i" unitRef="USD">6588000000</us-gaap:LongTermInvestments>
<us-gaap:LongTermInvestments decimals="-6" contextRef="FY2007_i" unitRef="USD">10117000000</us-gaap:LongTermInvestments>
<us-gaap:Goodwill decimals="-6" contextRef="FY2008_i" unitRef="USD">12108000000</us-gaap:Goodwill>
<us-gaap:Goodwill decimals="-6" contextRef="FY2007_i" unitRef="USD">4760000000</us-gaap:Goodwill>
<us-gaap:IntangibleAssetsNetExcludingGoodwill decimals="-6" contextRef="FY2008_i" unitRef="USD">1973000000</us-gaap:IntangibleAssetsNetExcludingGoodwill>
<us-gaap:IntangibleAssetsNetExcludingGoodwill decimals="-6" contextRef="FY2007_i" unitRef="USD">878000000</us-gaap:IntangibleAssetsNetExcludingGoodwill>
<us-gaap:DeferredTaxAssetsNetCurrent decimals="-6" contextRef="FY2008_i" unitRef="USD">949000000</us-gaap:DeferredTaxAssetsNetCurrent>
<us-gaap:DeferredTaxAssetsNetCurrent decimals="-6" contextRef="FY2007_i" unitRef="USD">1389000000</us-gaap:DeferredTaxAssetsNetCurrent>
<us-gaap:OtherAssetsNoncurrent decimals="-6" contextRef="FY2008_i" unitRef="USD">1691000000</us-gaap:OtherAssetsNoncurrent>
<us-gaap:OtherAssetsNoncurrent decimals="-6" contextRef="FY2007_i" unitRef="USD">1509000000</us-gaap:OtherAssetsNoncurrent>
<us-gaap:Assets decimals="-6" contextRef="FY2008_i" unitRef="USD">72793000000</us-gaap:Assets>

```

The browser's address bar shows the URL: [http://fraank.eycarat.ku.edu/cgi-bin/vml/working/ic/get\\_Report.pl?rep=http://www.sec.gov/Archives/edgar/data/789019/0001193125-08-162768.txt07312008MICROSOFT\\_CORP&xbri=1&&html=1&&SIC=7372](http://fraank.eycarat.ku.edu/cgi-bin/vml/working/ic/get_Report.pl?rep=http://www.sec.gov/Archives/edgar/data/789019/0001193125-08-162768.txt07312008MICROSOFT_CORP&xbri=1&&html=1&&SIC=7372). The taskbar at the bottom shows the system tray with the time 12:34 AM and various application icons.

Figure 2 (Continued): Instance Document of 2008 Balance Sheet in the annual report 10K of Microsoft filed with the S