The SEC's XBRL Voluntary Filing Program on EDGAR: A Case for Quality Assurance

Article begins on next page

The SEC's XBRL Voluntary Filing Program on EDGAR: A Case for Quality Assurance

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SUMMARY: XBRL (eXtensible Business Reporting Language) was developed to provide users with an efficient and effective means of preparing and exchanging business reporting, and especially financial information over the Internet. After years of development, XBRL is now in the implementation stage, with many companies, governments, regulators, and stock exchanges around the world implementing or planning to adopt XBRL for electronic filing of financial reports and other business documents and filings. In this paper, we examine the XBRL-Related Documents furnished to the SEC's XBRL Voluntary Filing Program (VFP) on EDGAR from its inception to December 31, 2007, and report findings from our observations and validation tests. We identify persistent and increasing quality control and assurance issues pertaining to the XBRL-Related Documents furnished under the VFP and discuss potential countermeasures needed to ensure that XBRL-Related Documents are reliable and gain user confidence and acceptance.

Keywords: XBRL; XBRL voluntary program on EDGAR; XBRL quality assurance issues.

INTRODUCTION

Rapid advances in computer and communication technologies have dramatically changed the way in which information is created and exchanged between business parties, and thus have revolutionized the way business is conducted. Business information is not an exception to these developments. Business information is increasingly being provided on the Internet in HTML or PDF format. XBRL (eXtensible Business Reporting Language) was developed to further enhance business information exchange by providing a standardized method to prepare, publish, and exchange business, and especially financial, information (Boritz and No 2004b; Hoffman and Strand 2001; XBRL International 2007a).

Regulators and government agencies in many countries are increasingly implementing XBRL for regulatory filings (XBRL International 2007b). For instance, in the U.S., the Securities and Exchange Commission (SEC) has adopted a voluntary XBRL filing program (SEC 2005b). Also, the Canadian Securities Administrators (CSA) launched an XBRL voluntary filing program on January 19, 2007 (CAS 2007). The U.K. plans to make XBRL mandatory for company tax filings from 2010 (XBRL International 2006c). Japan has mandated filing in XBRL for all public companies by the end of the second quarter of 2008, and the Tokyo Stock Exchange (TSE)

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introduced an XBRL reporting system in 2006 (XBRL International 2006b). Korea instituted a voluntary XBRL program in October of 2007 (SEC 2007). China already requires interactive data filing for the full financial statements of all listed companies in quarterly, half-year, and annual reports (SEC 2007).

The increasing global adoption of XBRL and its potential to replace traditional formats for filed business documents raise questions about the quality of XBRL-tagged information (Boritz and No 2004a; Brian et al. 2006; Elliott 2002; Farewell and Pinsker 2005; Pinsker 2003). Christopher Cox, Chairman of the SEC, has been quoted as saying that no assurance would be required on XBRL filings (Reuters 2007):

> Companies that adopt an interactive data format for regulatory filings will not need an additional audit of the conversion of their financial data … subjecting the conversion of raw financial data to extra scrutiny could mean "crib death" for the project.

This implies that the SEC believes that companies will produce XBRL documents of satisfactory quality without such assurance or that the SEC itself would monitor and provide quality assurance on "*XBRL-Related Documents*" furnished on EDGAR. XBRL-Related Documents are documents related to presenting financial information in XBRL format that are part of the Voluntary Filing Program (VFP) and generally indicate XBRL instance document and XBRL taxonomy.[1]

The main goal of this paper is to consider whether there is a need for some type of quality assurance for XBRL-tagged information furnished with regulatory authorities, such as the SEC. Thus, we gather information about the quality of XBRL fillings in the SEC's XBRL VFP on EDGAR. Our findings offer potentially valuable insights to preparers, users, regulators, and academics about the quality of current filings as well as quality assurance issues for consideration as the VFP grows and eventually becomes mandatory for some or all public companies.[2]

The remainder of the paper is organized as follows. The next section provides an overview of the VFP and introduces the research questions that are examined in this study. This section is followed by details of our analyses of the XBRL filings in the VFP. Finally, the findings of the study are presented, and their implications are discussed.

AN OVERVIEW OF XBRL WORKFLOW

Under the current adoption of XBRL, both traditional paper format financial statements and XBRL-tagged financial statements exist concurrently. The financial statements are available in the usual way, and the XBRL-Related Documents are generated from the paper format financial statements. Figure 1 summarizes the typical XBRL work flow.

A company enters its financial data and stores them in one or more databases (*Input and Process* in Figure 1). After that, its internal accounting system generates financial statements and other disclosures and places them on the corporate website or EDGAR (the dotted arrow in Figure

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[1] An *XBRL instance document* is the financial or business information of the entity tagged with XBRL elements. An XBRL *taxonomy* is a dictionary linking agreed-upon financial terms used in preparing financial statements or other business reports and the corresponding XBRL elements. An XBRL taxonomy consists of taxonomy schema and linkbase. The *taxonomy* schema provides users with a set of business information elements that allows users to identify business information in a consistent way. The *linkbase* is a collection of extended links that document the semantics of concepts in a taxonomy. It consists of five different types of extended links: Label, Reference, Presentation, Calculation, and Definition. Finally, an *element* is a concept described by a taxonomy. For example, the element with the name "CashCashEquivalents" is a concept. See Bergeron (2003) and White (2006) for more detailed and comprehensive information.

[2] The SEC's Advisory Committee on Improvements to Financial Reporting (ACIFR) recently released a report suggesting that over the long term, the SEC should mandate XBRL filings on the SEC's EDGAR (ACIFR 2008).

FIGURE 1
XBRL Workflow
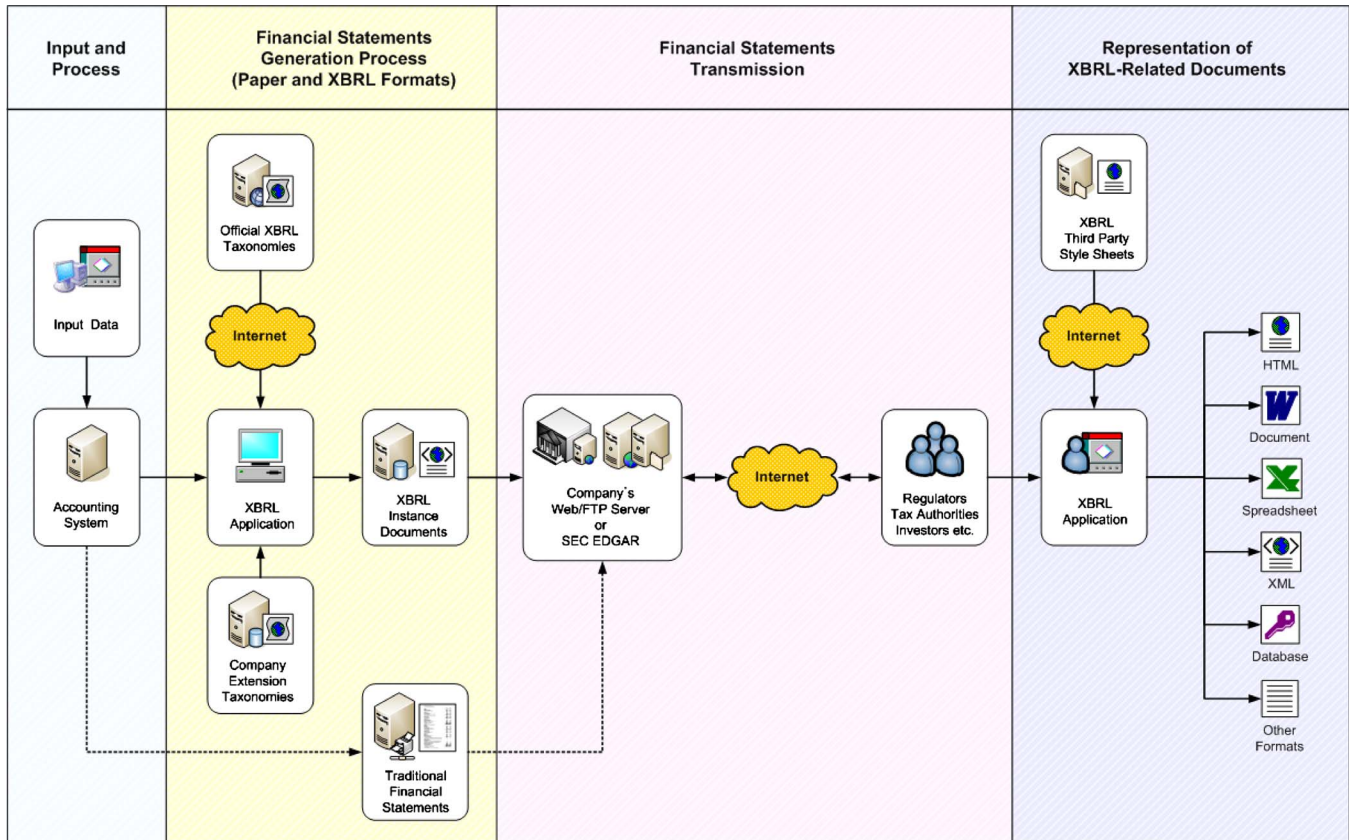
1). The PDF or HTML versions that are generated include the same content in the paper format financial statements (*Financial Statement Generation Process—Paper Format* in Figure 1).

XBRL instance documents are concurrently created by mapping the information in the paper format financial statements to elements in official XBRL taxonomies and company extension taxonomies (the solid arrow in Figure 1). The official XBRL taxonomies are obtained from XBRL organizations such as XBRL International (XBRL.ORG) via the Internet.

Generally, the official XBRL taxonomies do not contain elements for all the paper format information that is typically filed. Therefore, when creating their XBRL-Related Documents, companies must either omit/merge some of the information that they otherwise provide in their paper format filings, or they must create customized taxonomies, called company extension taxonomies, to enable the XBRL-Related Documents to parallel the paper format filing as closely as possible.

Validation software can be used to check that the documents are valid XBRL instance documents and valid extension taxonomies. Then, the verified XBRL instance documents and extension taxonomies are placed on the corporate website or other sites such as EDGAR (*Financial Statement Generation Process—XBRL Format* in Figure 1).

Once information preparers create both formats of financial statements, users can obtain them on the Internet (e.g., from the company website or EDGAR) whenever they need the information contained in the financial statements (*Financial Statement Transmission* in Figure 1). Users then extract the data in the XBRL-Related Documents and analyze the data with analytical applications.

It is important to recognize that the XBRL-Related Documents would not normally be viewed by a person in their raw form. Thus, if users want to transform the documents into their preferred formats such as HTML, a spreadsheet, or database, they can do so with appropriate stylesheets[3] developed by them or by outside software developers (*Representation of XBRL-Related Documents* in Figure 1).

SEC'S XBRL VOLUNTARY FILING PROGRAM ON EDGAR

In March 2005, the SEC adopted rule amendments (33-8529) establishing the VFP on EDGAR (SEC 2005b). The amendments enable voluntary filers to furnish XBRL-Related Documents (i.e., XBRL instance, taxonomy schema, linkbase files, and perhaps an independent auditor's report) on EDGAR in addition to official filings such as 10-K and 10-Q. XBRL-Related Documents furnished under the VFP are submitted as exhibits of the official filings or exhibits to a filing on 8-K, 6-K, 485BPOS, or N-CSR. The distinction between information that is *filed* and information that is *furnished* implies lower levels of responsibility on the part of both the company and the auditor in connection with the latter. However, some auditors do not view this as a distinction that would lessen their responsibility (Sharpe 2007).

The main purpose of the VFP is to encourage companies to experiment with and learn from the process of creating XBRL filings to parallel their traditional 10-Q and 10-K filings as well as to assist the SEC in assessing the feasibility of XBRL as a potential filing format on EDGAR in the future (Debreceny et al. 2005). XBRL can also help the SEC fulfill its regulatory obligations established under Sarbanes-Oxley legislation to review each issuer's 1934 Act reports at least once every three years.

According to the SEC, the information that appears in the XBRL instance documents must accurately reflect the underlying information in the corresponding official filings. In addition, participants in the VFP must prepare the XBRL instance documents using the official U.S. GAAP taxonomies, and the XBRL filings must also include taxonomy schema and linkbase files if they use extensions to create their XBRL instance documents. Auditors' reports, notes accompanying the financial statements, and supporting schedules are optional and can be excluded. The SEC requires companies to indicate that their XBRL-Related Documents are "unaudited" or "unreviewed" and to advise users that their investment decisions should not rely on the XBRL data.

The PCAOB (2005) issued Q&As (Questions and Answers) related to *attest engagements* regarding XBRL financial information furnished in the VFP. It states that "an auditor may be engaged to examine and report on whether the XBRL-related documents accurately reflect the information in the corresponding part of the official EDGAR filings." This suggests that there *may* be a desire on the part of preparers and users for an assurance service regarding the tagging operation.

To our knowledge, no study has been conducted to examine the quality of the information furnished under the VFP except for Chou (2006) and a case study by Boritz and No (2008) of the United Technologies Corp. filing. Chou (2006) studied XBRL-Related Documents in the VFP and examined the validity of 93 XBRL filings of 31 companies using the Fujitsu Taxonomy Builder & Instance Creator. He found that 52 XBRL filings (55.91 percent) had calculation errors and extensively used company-owned taxonomy extensions. Boritz and No (2008) conducted a mock audit on the XBRL-Related Documents of United Technologies Corporation's October 2005 10-Q to identify the issues that companies and auditors might encounter if they are requested to provide assurance on the XBRL-Related Documents.

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[3] A *stylesheet* is a file that describes how a document should be displayed.

Although the studies conducted by Chou (2006) and Boritz and No (2008) examined the quality of XBRL filings in the VFP, there are still unanswered questions:

(1) Do the XBRL-Related Documents furnished under the VFP conform to the suggested XBRL taxonomies and specifications as well as requirements of the VFP?

(2) Has the quality of XBRL-Related Documents improved since the SEC launched the VFP, indicating that learning—one of the main goals underlying the VFP—has taken place?

The aforementioned two unanswered questions are investigated in this study. This study differs from the study conducted by Chou (2006). Whereas Chou examined some aspects of XBRL filings up to November 27, 2006, this study examines the complete set of XBRL filings in the VFP as of December 31, 2007 and assesses whether the quality of XBRL filings has improved since the SEC launched the VFP.

CURRENT STATE OF THE XBRL VOLUNTARY FILING PROGRAM

To gather information about the current state of the VFP, we examined the 304 XBRL filings from 74 companies from the initiation of the VFP (March 2005) to December 31, 2007 (although seven companies[4] have dropped out of the program, leaving 67 as of December 31, 2007). As might be expected, as a whole, these companies are large and profitable. On average, the number of employees is 49,373 and the average values of total assets, total liabilities, total sales, and net income are $63,968M; $47,884M; $29,205M; and $3,170M, respectively. The companies are from 24 different industries classified by two-digit SIC codes. Since the SEC introduced the VFP in 2005, the number of participating companies as well as industries has grown from nine companies from four industries in 2005, to 35 companies from 18 industries in 2006, and to 67 companies from 22 industries in 2007. The number of XBRL filings has increased correspondingly from 22 filings in 2005, to 94 filings in 2006, and to 188 filings in 2007.

ANALYSIS OF XBRL FILINGS IN THE XBRL VOLUNTARY FILING PROGRAM

Use of Extension Taxonomies

As of December 31, 2007, the existing official XBRL taxonomies did not contain elements for all the information that is typically contained in a company's official 10-Q and 10-K filings; thus, companies need to create customized taxonomies to enable their XBRL filing to parallel the official filing as closely as possible. The ability to extend official taxonomies is one of the benefits of an extensible markup language, and the use of such extensions to customize an XBRL document is therefore considered by some commentators as the strength of an extended XBRL document compared to a non-extended document based only on the official taxonomies. However, the use of extensions can be a challenge for preparers with limited knowledge of XBRL and may lead to non-comparability between companies, undermining one of the primary goals of XBRL. Such customizations not only add time and effort to ensure that the extensions are

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[4] They are Business Objects S.A., EMC Corp., Crystal International Travel Group Inc., Hitachi Ltd., Molina Healthcare Inc., Qualcomm Inc., and South Financial Group Inc.

appropriate (i.e., the same or very similar concepts are not already contained in the official tax-onomies), but also can raise an issue about the potential manipulation of how items are reported compared to the official taxonomies.[5]

We found that all 304 filings used extension taxonomies. By itself, this should not be a sur-prise. Some use of extension taxonomies is virtually required due to the need to customize labels, presentation, matching up sub-totals, etc. However, we found that significant proportions of the instance documents were based on companies' own customized taxonomy extensions. In filings that included notes and MD&A, the number of extensions was much higher than in filings that only included the basic financial statements. Our analysis of the taxonomies used in the most recent filings of the 67 companies in the VFP as of December 31, 2007 shows that, on average, the companies used 162 official taxonomy elements and 190 extension taxonomy elements, repre-senting 55.4 percent of the total elements used. On average, the companies used 13 contexts, and various official XBRL taxonomies were used in the XBRL filings (see Table 1).[6] Due to the absence of any statement by the company or an assurance provider about the extensions, it is impossible to tell whether all extensions were justifiable or the degree of non-comparability they introduced into the financial statements.

Notes and MD&A

To date, the development of XBRL taxonomies has focused on the financial statements, leav-ing the notes and MD&A comparatively underdeveloped. As a result, companies are often re-quired to extend the official XBRL taxonomies if they wish to include notes and MD&A in their filings. The VFP does not require notes or MD&A to be presented; however, if notes are included, they must be included in their entirety, requiring companies that want to include these components to invest significant time and effort to create extension taxonomies unless they opt to block tag (use one tag per note) their Notes and/or MD&A. Most companies are either unwilling to block tag or are unwilling to incur the costs of creating extension taxonomies, and this is reflected in their filings. We examined the most recent quarterly filing of the 67 companies in the VFP as of December 31, 2007 as summarized in Table 1. We found that only 13 XBRL documents included notes, and only one of these also provided MD&A. None of the companies had an accountant's report or assurance report, although three earlier filings by two companies had assurance reports.[7]

Agreement of XBRL-Related Documents with Official Filings

We noted several instances when the XBRL-documents were not the same as the most closely related official filings. For instance, the XBRL filings (at 2005-08-19, 2007-01-23, and 2007-04-18) of United Technologies Corp. were not the same as the original filings (10-Q at 2005-04-26, 10-K at 2007-02-08, and 10-Q at 2007-04-20). The XBRL instance documents were for a slightly different period than the original period of the official 10-Q and 10-K filings.

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[5] The new U.S. GAAP taxonomies (in public review) are more comprehensive and detailed than the current taxonomies. The new taxonomies have approximately 15,000 elements, while the current taxonomies have roughly 2,500 elements. Therefore, it is expected that the use of company extension taxonomies will be significantly reduced.

[6] A *context* is an element that contains information about the entity being described, the reporting period, and the reporting scenario, all of which are necessary for understanding a business fact captured as an XBRL element.

[7] Two XBRL filings of United Technologies Corp. (at 2005-12-22 and 2006-12-06) and one filing of W. R. Grace & Co. (at 2007-11-30) were assured by their auditors, PricewaterhouseCoopers LLP.

TABLE 1
Most Recent Filings of the 67 Companies in the VFP as of December 31, 2007

Detailed Information of the XBRL Filings	Average
Total lines	556
Total number of elements	352 (100%)
Official Taxonomy	162 (44.6%)
Company Extension Taxonomy	190 (55.4%)
Contexts	13
Notes	13
MD&A (only one company coded)	—
Accountant's Report	0
Accountant's Report on the XBRL Instance Document	0

Official Elements used in the XBRL Filings	Average
SEC Certification (usfr-seccert)	2
Management Report (usfr-mr)	0
Accountants Report (usfr-ar)	1
Management's Discussion & Analysis (usfr-mda)	2
Primary Terms Elements (usfr-pte)	53
Primary Terms Relationships (usfr-ptr)	27
Financial Service Terms Elements (usfr-fste)	10
Financial Service Terms Relationships (usfr-fstr)	7
Commercial and Industrial (us-gaap-ci)	29
Banking and Savings Institutions (us-gaap-basi)	0
Insurance Entities (us-gaap-ins)	0
Investment Management (us-gaap-im)	1
International Financial Reporting Standards (ifrs-gp)	1
Investment Company Institute (ici)	11

Consistency

We noted instances when contexts were not defined consistently from filing to filing for the same company. For instance, a context (i.e., "C1") was defined for the duration between 2006-03-26 and 2006-06-17 in the XBRL filing of PepsiCo Inc. at 2007-07-24. However, the same context was used for the period between 2006-06-18 and 2006-09-09 in the XBRL filing at 2007-10-11. Contexts that are not consistent from period to period can make it difficult to perform inter-period comparisons.

Validation Tests

According to Appendix 50 of the EDGAR Filer Manual (SEC 2005a), companies that furnish XBRL-Related Documents under the VFP must create them using XBRL Specification v2.1 and

official U.S. GAAP taxonomies developed by the XBRL consortium.[8] The manual also states that any company extensions of those taxonomies must conform to XBRL Specification v2.1. Thus, we performed validation tests on all 304 XBRL filings furnished by the 74 participants in the VFP from its inception in 2005 to December 31, 2007, using currently available validation software to examine whether the filings are in conformity with the suggested XBRL taxonomies and specifications as well as the requirements for XBRL filings.[9] To obtain reliable results we used two different software tools: Fujitsu's Instance Creator (Version 42) and Taxonomy Editor (Version 42) and DecisionSoft's True North Personal Validator 2006 (Version 2.3.3).[10] Table 2 summarizes our findings.

Validation Test Results for Extension Taxonomies

We found that 272 of the 304 filings (89.5 percent) passed our taxonomy validation tests.[11] Interestingly, we found a discrepancy between the two XBRL software products used for taxonomy validation tests. While the Fujitsu Taxonomy Editor indicates some exceptions as fatal errors in several companies' extension taxonomies, DecisionSoft's True North Personal Validator does not report those errors at all.[12] For instance, the Fujitsu Taxonomy Editor showed that all XBRL filings of Ford Motor Co. contain a fatal error; an element (i.e., Accounts Payable), which is referenced by links, has no "id" attribute. However, DecisionSoft's True North Personal Validator did not report this as an error. The fact that different software generates different error messages compounds the difficulties that preparers and users face when they attempt to assess the quality of company extension taxonomies and could limit the acceptance of XBRL as a data exchange mechanism.

As noted previously, most companies do not provide notes and MD&A in XBRL format. Those that do follow a variety of practices, ranging from block tagging to extensive, detailed tagging based on a large number of taxonomy extensions. Notes and MD&A represent items that will take some time to address by XBRL developers. We also noted examples where companies used several versions of a taxonomy when they could have used a single comprehensive taxonomy to ensure better inter-period consistency and reliability. We concluded that companies need guidance on creating taxonomy extensions; perhaps even specific requirements to enhance consistency and quality of practices in this area.

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[8] The *XBRL Specification* is the fundamental technical definition of how XBRL works. It describes the syntax and rules of XBRL and defines elements and attributes that can be used to express information used in the creation, exchange, and comparison tasks of business reporting.

[9] Many software vendors have developed XBRL applications, and several consulting firms are providing XBRL services for companies who are planning to implement XBRL (XBRL International 2007b). As of October 1, 2007, 33 companies provide XBRL tools and consulting services; 16 of them offer XBRL products with respect to integrating XBRL into the financial reporting process (e.g., incorporating XBRL into ERP systems), while 14 vendors provide stand alone XBRL application software (e.g., instance creator and taxonomy creator). In addition, five companies offer analysis tools for XBRL, and three firms provide XBRL consulting services.

[10] While current XBRL validation software can identify whether the XBRL-Related Documents conform to the XBRL specifications, it does not provide a measure of whether the elements used to represent financial facts in the official financial statements are appropriate and whether the use of company extension taxonomies is justifiable.

[11] Taxonomy validation is a process whereby a software program analyzes a taxonomy to confirm that the taxonomy complies with the requirements of the XBRL specifications.

[12] Since the Fujitsu Taxonomy Editor used for our validation tests was updated more recently than DecisionSoft's True North Personal Validator, it is possible that the Fujitsu Taxonomy Editor may contain recent or newly established requirements (e.g., formula and dimension). Consequently, errors that are identified in the Fujitsu Taxonomy Editor may not be specified as errors in the True North Personal Validator.

TABLE 2

Summary of XBRL Filings 2005–2007

	2005				2006				2007				Overall		
	n	File	Txy	Ins	n	File	Txy	Ins	n	File	Tax	Ins	File	Txy	Ins
Older Filers					8	28	0 (0%)	14(50.0%)	29	110	22(20.0%)	64(58.2%)	138	22(15.9%)	78(56.5%)
New Filers	9	22	0(0%)	13(59.1%)	27	66	7(10.6%)	46(69.7%)	38	78	3(3.8%)	63(80.8%)	166	10(6.0%)	122(73.5%)
Total	9	22	0(0%)	13(59.1%)	35	94	7(7.4%)	60(63.8%)	67	188	25(13.3%)	127(67.6%)	304	32(10.5%)	200(65.8%)

	Year	n
No. of Companies that dropped out of the VFP	2006	1
	2007	5
	Overall	6

n = number of companies;
File = number of XBRL filings;
Ins = number of XBRL filings that did not pass the instance document validation test; and
Txy = number of XBRL filings that did not pass the extension taxonomy validation test.

Validation Test Results for Instance Documents

Only 104 of the 304 filings (34.2 percent) passed the instance document validation test without any errors/exceptions being noted.[13] As mentioned previously, XBRL validation software generates different types of validation error messages with different degrees of severity. Some errors (i.e., fatal errors) represent failure to follow mandatory requirements contained in the relevant specifications. For example, the XBRL filing (2007-11-30) of General Electric Co. contained a fatal error regarding its extension taxonomy. The additional label created for "Accounts Payable" was not the "preferredLabel" for the element declaration with respect to XBRL specification.[14] Other errors represent inconsistencies between an XBRL instance document and suggested, but not mandatory, practices. For example, sub-totals that are in the taxonomy but not in the instance document would be flagged by some software products as calculation errors. An example of this is having "Accounts Receivable, Net" and "Allowance for Doubtful Accounts" in the instance document but omitting "Accounts Receivable, Gross." The validation routine reports an error since it is inconsistent with the taxonomy, which contains all three elements and relates them through a calculation link. However, we believe that most users would view this as a legitimate reporting choice and not an error. Nevertheless, a problem could arise if users have to investigate each such "calculation error" to assess its significance, adding to the time and cost of quality assuring the instance document. Furthermore, if validation software reports such inconsistencies as errors, many users will certainly consider them as errors unless they manually examine those inconsistencies. This can lead them to question the reliability and quality of XBRL-tagged information, and thus have a negative impact on the acceptance and proliferation of XBRL.

FRIS and FRTA Tests

We found that none of the companies passed Financial Reporting Instance Standards (FRIS) and Financial Reporting Taxonomies Architecture (FRTA) validation tests. FRIS were developed to facilitate the analysis and comparison of data in XBRL instance documents. FRIS provide a guideline for creating instance documents under XBRL Specification v2.1 (XBRL International 2004). FRTA specifies a recommended design architecture and establishes rules and conventions, which help make taxonomies more usable and efficient (XBRL International 2006a). The existing official U.S. GAAP taxonomies were themselves not fully FRTA compliant, and therefore companies using those taxonomies would be FRTA non-compliant as well. FRIS is still a working draft that has not yet achieved general agreement; therefore, the exceptions identified by our validation tests may represent inconsistencies due to disagreements with standards still under development rather than errors. Since the VFP does not require compliance with FRTA and FRIS, not being consistent with them cannot be considered a contravention of the VFP requirements. Unfortunately, this may also lead companies to pay less attention to FRTA and FRIS.

Other Errors

We found some other errors in the XBRL filings in the VFP. First, some filers used different CIK (Central Index Key) and Ticker symbols as the "identifier" in their XBRL instance documents. For

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[13] Instance validation is a process that checks whether the XBRL instance document is consistent with the XBRL specifications and extension taxonomies.

[14] According to the Section 5.2.4.2.1 of XBRL Specification v2.1, if a company wants to use a different label instead of the label in the official XBRL taxonomies, the company can do so through the use of the preferredLabel attribute in presentationArc elements in the presentation linkbase. When it is used, the value of the preferredLabel attribute must be equal to an xlink:role attribute value on a label resource (in a labelLink extended link) that is the target of a concept-label arc from the presentationArc element's child concept.

instance, 3M Co. used CIK (i.e., 0000066740) in the XBRL filing at 2007-05-16, but the Ticker symbol (i.e., mmm) was used in another filing at 2007-07-02. For the XBRL filing at 2007-09-19, both the Ticker symbol and CIK were used (i.e., mmm-0000066740). Second, some companies used their own elements instead of official elements. For example, Liberty Media Corp. created an element (i.e., CashCashEquivalents) in their taxonomy extension at 2007-11-20, but the element was already defined in the official taxonomy (i.e., usfr-pte: primary terms elements). Finally, the XBRL filing of Bowne & Co. Inc. at 2005-04-04 used an inappropriate link in their extension taxonomy. The extension taxonomy defined a new roleType (i.e., Bowne Extension Income State-ment) for "Income Statement" which is different from the official taxonomy (us-gapp-ci: commer-cial and industry). As a result, the SEC's Interactive Data Viewer could not find the income statement.

Quality of XBRL Filings Over Time

To investigate whether there has been an improvement in the quality of XBRL filings since the SEC launched the VFP in 2005, we examined the trends in frequencies of XBRL filings that failed our validation tests over the three-year duration of the VFP. We expected that the quality of filings would improve over time as companies learned how to prepare XBRL documents, learned from earlier filings, and improved on past practices.

Contrary to our expectations, the graph shown in Figure 2 indicates that the proportion of XBRL filings that failed the extension taxonomy validation test did not decrease over time, but rather increased from 0 percent in 2005, 7.4 percent in 2006, to 13.3 percent in 2007. A similar trend was also observed with respect to the instance document validation test from: 59.1 percent in 2005, to 63.8 percent in 2006, to 67.6 percent in 2007.

Table 2 shows a summary of XBRL filings. For the past three years, 304 filings were furnished to the VFP, and a total of 32 filings (10.5 percent) did not pass our taxonomy validation test. In addition, Table 2 shows that the number of XBRL filings of older filers that failed the taxonomy validation test has increased over time: zero filings in 2006 and 22 filings in 2007. Interestingly, the number of XBRL filings of new filers that failed taxonomy validation tests increased in 2006 but decreased in 2007: zero filings in 2005, seven filings in 2006, and three filings in 2007.
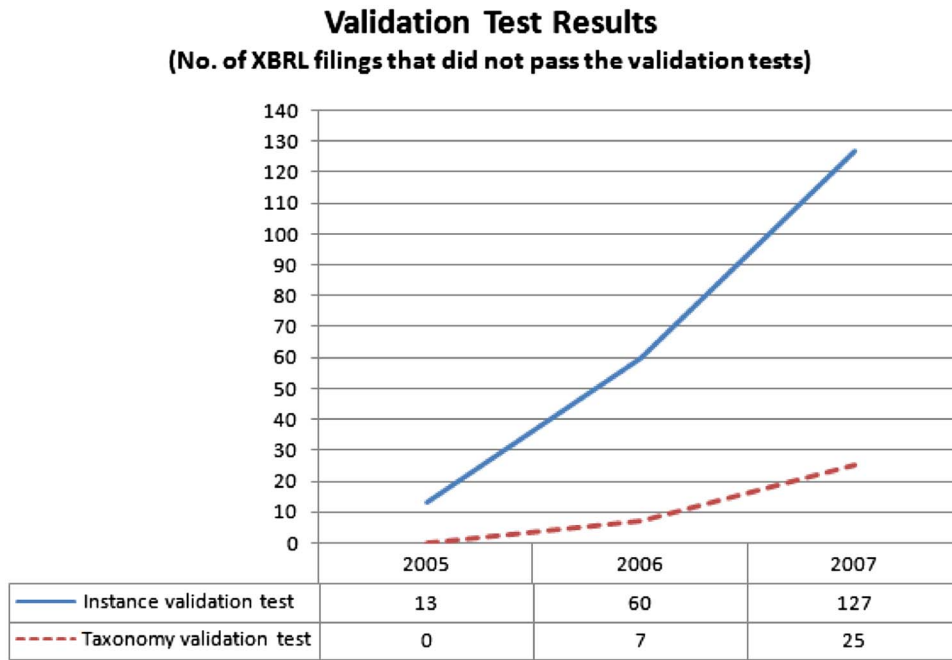
With respect to the instance document validation, more than half of them (200 filings; 65.8 percent) did not pass our validation test. The number of XBRL filings of older filers that failed the instance document validation test has increased over time: 14 filings in 2006 and 64 filings in 2007. Similarly, the number of XBRL filings of new filers that failed the instance document valida-tion test has increased over time: 13 filings in 2005, 46 filings in 2006, and 63 filings in 2007.

We used a logistic regression to assess whether filing year was a significant predictor of the validation test results, after controlling for industry and company size. Our analysis shows that the number of XBRL filings that failed the validation tests has been statistically increasing (tax-onomy extensions) or constant (instance documents), implying that no learning has been taking place over the duration of the VFP. However, it is important to note that the main purposes of the VFP is to provide an opportunity for companies to learn from the process of creating XBRL filings and for the SEC to assess the feasibility of XBRL as a potential filing format on EDGAR. There-fore, it is possible that companies participating in the VFP focus more on understanding and experiencing XBRL rather than filing appropriate XBRL-Related Documents.
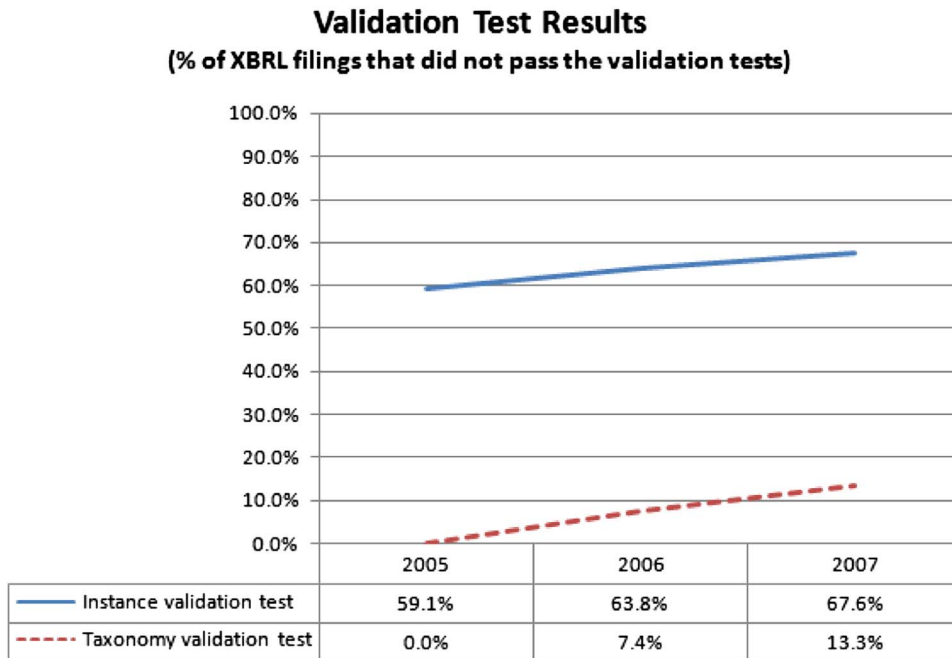
IMPLICATIONS AND CONCLUSIONS

Under the VFP, the XBRL-Related Documents are furnished, not filed, and companies are not required to obtain independent assurance on the XBRL-tagged information. However, with the

FIGURE 2
Validation Test Results of XBRL Filings between 2005 and 2007

Validation Test Results
(No. of XBRL filings that did not pass the validation tests)

	2005	2006	2007
Instance validation test	13	60	127
Taxonomy validation test	0	7	25

(a)

Validation Test Results
(% of XBRL filings that did not pass the validation tests)

	2005	2006	2007
Instance validation test	59.1%	63.8%	67.6%
Taxonomy validation test	0.0%	7.4%	13.3%

(b)

increasing adoption of XBRL and its potential to replace paper format financial statements, there has been growing awareness about assurance issues related to the use of XBRL. To identify whether there are quality assurance issues related to the XBRL filings, this study examined the current state of the SEC's VFP on EDGAR. Specifically, we investigated whether XBRL documents furnished to the VFP conform to the suggested XBRL taxonomies and specifications as well as requirements for XBRL filings and whether the quality of XBRL filings improved between 2005 and 2007. Our findings indicate that:

(1) most companies in the VFP did not include notes and MD&A in their XBRL filings;

(2) all companies made extensive use of extension taxonomies threatening the comparability and reliability of the furnished XBRL-Related Documents. The drawback of such extensions is that they can reduce comparability between companies, although it can also be argued that extension taxonomies can improve comparability by enabling a company to avoid using inappropriate elements in the official taxonomy that does not contain sufficient elements to enable the company to choose official elements that best reflect the company's own elements;

(3) there were instances where the XBRL filings did not match up with the relevant official filings;

(4) there were instances when contexts defined in XBRL instance documents were not consistent from quarter to quarter;

(5) none of the filings passed FRTA or FRIS validation tests;

(6) about 10 percent of the XBRL extension taxonomies furnished under the VFP contain validation exceptions, inconsistencies, and errors;

(7) about two-thirds of the XBRL instance documents furnished under the VFP contain validation exceptions, inconsistencies, and errors;

(8) different software tools generate different error messages with respect to companies' taxonomy extension validation; and

(9) the quality of XBRL filings has not improved since the SEC launched the VFP.

After years of development, XBRL is gaining momentum with increasing adoption across the world as a common language for reporting, exchanging, and analyzing business information. However, current XBRL-Related Document preparation practices are based on very limited guidance and experience, leading to potential quality control issues as documented in this paper.

Under the SEC's VFP on EDGAR, no independent assurance is required on the XBRL-tagged information. However, the results of this study suggest that there is insufficient quality control over the VFP. Hence, users wanting to benefit from the XBRL-coded filings on EDGAR would face serious difficulties if they attempted to assess the quality of XBRL-Related Documents (i.e., XBRL instance documents and taxonomies). This could limit the usefulness and acceptance of XBRL as a data exchange mechanism.

To enhance users' confidence and widespread adoption of XBRL requires a quality assurance program that would reduce users' uncertainties about the accuracy, completeness, consistency, reliability, and usefulness of the information disseminated using XBRL. As the promoter of the use of this technology and as the owner of the repository of the XBRL filings intended to be used by market participants, the SEC has a responsibility to develop a quality assurance program that improves XBRL filing compliance and quality. There are several ways it could do this. First, it can improve the quality of the taxonomies used for preparing instance documents, as it is currently doing (e.g., new U.S. GAAP taxonomies). Second, it can provide or encourage others to provide guidance on XBRL-Related Document preparation, including guidance on XBRL software selection, mapping company accounts to XBRL tags, developing extension taxonomy, and in-

stance document creation. The guidance should facilitate user review of coding quality. Third, it should clarify the role of FRIS and FRTA. Fourth, it should require companies to validate their filings before accepting them on EDGAR and could itself verify those validations against a common validation program. Fifth, the SEC should have an "approved" list of XBRL software. To be considered for approval software providers would have to improve the quality of their validation procedures and error messages to clearly distinguish errors from other exceptions. Sixth, the SEC could encourage companies to implement quality assurance mechanisms by making the XBRL filings the primary filings for which they would bear responsibility. Such responsibility would encourage most companies to implement much-needed internal or external quality assurance practices that would ensure that the information in the XBRL instance document complies with XBRL specifications, appropriate XBRL taxonomies, and applicable legislative or regulatory requirements.

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