

The Effects of XBRL on Financial Transparency

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Abstract

Extensible Business Reporting Language (XBRL) is an XML-based open standard, developed specifically for financial reporting. In wider terms, XBRL is a technology by which directed searches and simultaneous presentation of related financial statement facilitate, and also footnote information could potentially help financial statements' users. The use of search-facilitating technology depletes differences in nonprofessional investors' financial performance judgments and investment decisions created by recognition versus disclosure; accordingly, it could not be wrong to conclude that search-facilitating technology broadly improves the transparency of firm's financial information. Financial statements in XBRL format bring users of financial reports the opportunity that provides them with directly search for relevant information regardless of the information's location and to conveniently compare related information among different companies. All in all, XBRL can reduce unreliability of financial information for firms and help them to minimize the minus effect of nondeterministic decisions based upon financial statements' information.

Keywords: Xbrl (Extensible Business Reporting Language), Xml (Extensible Markup Language), Disclosure, Recognition, Transparency.

Introduction

XBRL is a member of the family of languages based on XML (Extensible Markup Language), is becoming a standard for the electronic exchange of data between businesses on the Internet. Using XML, identifying tags are attached to items of data so they can be processed efficiently by computer software. Therefore, XML has gained wide acceptance throughout the information technology community as a primary method to provide efficient data communication over the Internet (Bergeron,2003). As an XML convention, XBRL is easily extensible and can be used across platforms, software formats, and/or technologies. These XBRL characteristics allow the complex, ever-changing financial reporting process to become more efficient, effective and; accordingly, economical. As a result, it is becoming increasingly popular in public financial reporting.

XBRL is not a software application; also it is not a new accounting standard. XBRL is a so-called semantic data format additional to an open and free electronic language providing each data element with a tag that identifies it unambiguously.

The data tags, prepared by XBRL format, provide information about the structure of financial data that allows software applications, such as search engines, parsers and so forth, to more effectively process the data. As a case in point, software developed to search for these predefined data tags allows users to extract and simultaneously view all similarly coded information, notwithstanding where the information is presented in a firm's financial statements. This search capability has the potential to contribute to increase the transparency of different accounting treatments, decrease users' costs of processing information, and perform as a decision aid for users by facilitating the providing related information.

While search-facilitating technology has implications for numerous financial statement issues, recognition versus disclosure of financial information likely is one of the subjects which are most affected. In not too distant past, managers have strongly opposed standard setters' proposals to recognize in the financial statements items such as stock-based compensation and unrealized gains/losses on financial assets, preferring instead that these items be disclosed in the footnotes. One possible explanation for this vigorous opposition to recognition is that there exist economic costs accompanied by recognition if debt covenants or other contracts are restricted by recognized, but not disclosed, amounts. A second explanation is that managers believe that the items in question do not meet the FASB¹'s relevance and reliability criteria for recognition, and thereby deem disclosure the appropriate reporting alternative. A third explanation is that managers believe that users fixate on recognized items and discount disclosed items in view of processing costs or cognitive limitations. Such a belief would lead managers to disclose information they believe would harm firm value if recognized in the body of the financial statements.

Despite the reason managers oppose recognition in favor of disclosure, the implementation of search-facilitating technology has two implications for managers' choice of recognition versus disclosure. First and foremost, by facilitating comparisons across companies that differ in their choice of recognition versus disclosure, search-facilitating technology makes managers' choice of recognition versus disclosure more transparent to users. Second, search-facilitating technology allows users to conveniently access information disclosed in the footnotes and compare and integrate this information with related information recognized on the face of the financial statements. For both reasons, search-facilitating technology enables financial statement users to

¹ Financial Accounting Standard Board

make more informed decisions based upon the information contained in the report, regardless of where it is presented.

Financial Disclosure

Early research on the management of corporate financial disclosure has provided premises suggesting that managers may provide financial information for different reasons. While Gibbins (Gibbins, Richardson & Waterhouse, 1990) sees disclosures, in general, as any deliberate release of financial information, Stocken & Verrecchia (2004) defines disclosure management in terms of the strategic manipulation of financial information that the firm's reporting system generates. Therefore, manager's motivations to disclose include, but are not limited to, efforts to enhance their firms' value (Verrecchia, 1983) and attempts to protect proprietary information that may be used to their own personal advantage (Dye, 1985). Such disclosures may occur through manipulation of financial reports and may be linked to manager's choices of financial reporting systems (Stocken & Verrecchia, 2004). Here, financial reporting system choices are determinates of the precision of a firm's set of accounting policies and procedures (Stocken & Verrecchia, 2004). Of course, disclosure is not a substitute for proper accounting and may prove to be deceptive (Hake, 2005). Suppose, as an instance, that cash basis accounting for the cost of goods sold is misleading, even if accrual basis amounts are disclosed in the notes to the financial statements. The notes to financial statements generally amplify or explain the items presented in the main body of the statements. Also, supplementary information may include details that present a different perspective from that of the financial statements. Regardless, financial statements are generally accepted as a formalized, structured way of exchanging financial information. And, as such, the items on financial statements should meet the definition of a basic element in a conceptual framework (Kieso & Weygandt). They should also be measurable with sufficient certainty, and be relevant and reliable.

A lack of transparency tends toward less useful information that, in turn, may produce increased levels of uncertainty among financial statement users. When combined with the potential for management manipulation of disclosure information, users of financial reports are probably to face increased levels of risk. Hence, while antifraud laws, audits, and costly signals may deter false claims (Hughes, 1986), a resulting lack of transparency in financial reporting may be problematic to users of the information presented in some organizational releases.

Financial Transparency

Owing to lack of transparency, users of financial data have generally conceived that a reliance on current company reporting systems and a focus on earnings have

resulted in higher risks in the market as managers attempt to manage earnings (Allen & Cote, 2005). Specifically, they are finding that reported quarterly earnings may be suspect. As transparency decreases, these and other financial data are not always seen as reflecting the long term profitability of a firm.

As a consequence, those who lack access to financial data and expertise in ferreting out financial information tend to be less knowledgeable of the fair value of financial instruments (Evans, 2005). Consequently, users are beginning to differentiate between companies based on the efficiency with which they communicate shareholder value. In response to their realized lack of transparency, they seek detailed information on company assets (Phillips, 2000). They also appear ready to reward companies that increase the level of transparency associated with their financial reporting (Schipper, 1989). In doing so, users are expressing a need for information from companies that is enhanced and accessible (Harrington, 2005). While firms will tend to respond to these expressed requests, organizational attempts to balance internal requests and external transparency demands will likely persist (Anil, Glover & Sunder, 2003). On the one hand, firms with lower expected earnings may decrease transparency to maintain their stock prices (Hunton, Libby & Mazza, 2006); on the other hand, investors will reward higher transparency, aiming to meet the demand of their investors (Hebb, 2006). Whereas less transparency is more likely to enable managers to hide accounting problems and provide self-interested reporting of their financial data (Fan & Wong, 2002), greater transparency in reporting formats is more likely to reduce the management of earnings (Hunton, Libby & Mazza, 2006). However, companies attempting "to give the market what it wants" will tend to move toward transparency and companies with business models that incorporate

built in inefficiencies are likely to avoid doing so (Phillips, 2000).

Recent financial reporting scandals offer support to this position; therefore, regulating agencies around the world are moving toward standardization of financial reporting. But as international companies look at the different financial reporting standards in one country vs. another, the task of presenting shareholder value seems daunting if not impossible. International companies will have to adopt reporting standards in their accounting software which will allow flexible report writing capabilities (Coffin, 2002). Of course, such software is one element of financial reporting system choice.

Implication of Recognition versus Disclosure for Users' Decisions and Judgments

As indicated, there are several possible reasons why recognition and disclosure differentially influence users' judgments and decisions. First of all, managers' choice of

recognition versus disclosure per se can have implications for users' judgments by providing signals about information's relevance and/or reliability (Bernard & Schipper, 1994). Second, recognition versus disclosure can affect at least some users' judgments for reasons related to processing costs and cognitive limitations (Bloomfield, 2002 ; Hirshleifer & Teoh, , 2002). If managers realize this and choose to exploit it, an incentive exists to lobby for or choose disclosure of items they believe investors will perceive negatively. The first reason above reflects users' perceptions of data limitation; the second reflects limitations in the users themselves.

In this current paper, we focus primarily on the second reason, cognitive processing, in that it is the most influenced by search-facilitating technology. In order to process financial statement information appropriately, users must do some measures:

1. Realize what information is relevant.
2. Locate this information in the financial statements.
3. Evaluate the implications of this information for judgments and decisions, both alone and in conjunction with other information.

With regard to the first two steps, research suggests that users not understanding the relevance of footnote information may not access this information. Process-tracing research identifies both a directive search strategy, in which individuals search directly for specific financial statement items, and a sequential search strategy, in which individuals read the financial statements in the order reported (Bouwman, Frishkoff & Frishkoff , 1987). Financial analysts who use a directive search strategy in an experimental forecasting task have both higher historical accuracy at their brokerage firm and higher accuracy in the experimental task (Hunton & McEwen, 1997). These results are consistent with more knowledgeable financial statement users finding relevant information in spite of its placement in the financial statements and less knowledgeable users simply reading the information as presented. Since footnotes typically are among the last items presented in an annual report, users who use a sequential strategy may reach an "overloaded" cognitive state prior to reading the footnotes and not access this information.

Even if users read the footnotes, they may not understand the implications of the information, either alone, or along with related information presented elsewhere in the financial statements. Research finds that users who do not fully understand a financial item use placement within the body of the financial statements as a signal of the nature and importance of financial information. As a prototype, nonprofessional investors view comprehensive income items as more important for assessing firm performance when these items are presented in a performance (income) statement than in a statement of stockholders' equity (Maines & McDaniel, 2000). This research suggests that less-knowledgeable users may automatically assume that disclosed information is less

important than recognized information due to its placement. Additionally, given their sequential processing, less-knowledgeable users may have difficulty connecting related information dispersed via financial reports and thus fail to integrate footnote information with information presented in the body of the financial statements.

Ultimately, even if users are able to accomplish all three processing steps, they will not do so if they expect the cognitive costs of processing footnote information to outweigh the benefits. Research indicates that cognitive processing costs influence even professional users' judgments and decisions (Hirst & Hopkins, 1998). Seemingly, analysts ignore data that they believe does not provide important information.

In sum, research indicates that cognitive limitations and processing costs can cause investors to place less significance on disclosed items than recognized items for reasons unrelated to information relevance or reliability. Research also suggests that less-knowledgeable users, such as nonprofessional investors, are more probably than knowledgeable users, such as financial analysts, to fail to process footnote information appropriately.

Xbri and Search-Facilitating Technology

XBRL uses predefined data tags that provide information about the content and structure of a dataset, allowing search technology to more efficiently and effectively categorize and present the information. With knowledge of the labels associated with the data tags, users of electronic financial reports can easily extract and custom-format information to suit their analyses. For example, in our context of stock option compensation, a user can search for "salary expense" and retrieve simultaneously all items in the financial statements with that data tag, whether in the body of the statements or in the footnotes. Technology that facilitates directed searches potentially alleviates cognitive processing costs and limitations that lead to differences in users' judgments and decisions between firms that choose recognition versus disclosure. XBRL data tags contribute to the accomplishment of this by providing detailed information about the content and structure of the data, providing search engines to effectively perform a directed search and simultaneously present related financial statement and footnote information. Furthermore, search-facilitating technology can overcome users' knowledge limitations by acting as a decision aid that identifies related information and presents it simultaneously, providing users with an opportunity to integrate data better and make appropriate comparisons between firms that choose recognition versus disclosure. In other words, presenting information in a way that enhances the structure of the data and facilitates users linking relevant information allows users to more efficiently (and often effectively) acquire and use the information (Larkin & Simon, 1987).

For a company with outstanding stock options, reported net income is higher when the firm chooses to disclose stock option compensation in the footnotes than when the firm recognizes stock option compensation on the face of its income statement. We expect the difference in reported net income to influence users' financial performance judgments unless they adjust net income for stock option compensation disclosed in the footnotes. It is flagrant that search-facilitating technology will decrease the influence of recognition versus disclosure by making the firm's stock option compensation reporting choice more transparent and directing attention to the pro forma income statement effects of stock option compensation that is disclosed in footnotes. In concise, in the presence of search-facilitating technology, users' financial performance judgments will be less influenced by the choice of recognition versus disclosure of stock option compensation than in the absence of search-facilitating technology.

If users' investment decisions incorporate their financial performance judgments, investment decisions should reflect the predictions made in the prior hypothesis. Specifically, search-facilitating technology will lead users to be less influenced by differences in financial performance (net income) between recognition and disclosure. We state the corresponding hypothesis with respect to investment decisions below.

In the presence of search-facilitating technology, users' investment decisions will be less influenced by the choice of recognition versus disclosure of stock option compensation than in the absence of search-facilitating technology.

Search-facilitating technology may also affect other reasons for a differential user reaction to recognition versus disclosure: specifically, reasons related to perceived financial statement reliability such as inherent differences in relevance/reliability and managers' use of disclosure to decline negative information. Search-facilitating technology probably will make differences in recognition/disclosure policies between companies more transparent so that this technology retains placement signals (i.e., shows where different information items originate (Hodge, 2001), which XBRL does. Thus, search-facilitating technology can draw attention to a firm trying to play down stock option compensation by choosing disclosure in the footnotes rather than recognition on the income statement. This heightened sensitivity to a firm's disclosure choice will result in users having negative perceptions about the reliability of financial statements of firms that choose disclosure. These arguments lead to the following hypothesis related to reliability.

In the presence of search-facilitating technology, users' judgments of financial statement reliability will be more influenced by the choice of recognition versus disclosure of stock option compensation than in the absence of search-facilitating technology.

Proposed Method

Our experiment is consisted of sixty nonprofessional financial statement users. We choose these users as participants in that research suggests that they are more likely to be affected by cognitive processing limitations and costs than professional users (Hunton & McEwen, 1997). Furthermore, nonprofessionals play an important role in the capital markets. We randomly assigned participants to one of four conditions in a 2x2 between subjects design. In the one hand, the two independent variables are presentation format including non-searchable and searchable; on the other hand, placement of data including recognition and disclosure. The searchable condition contained a search-facilitating engine by XBRL at the bottom of the computer screen that provided participants to retrieve all information pertained to a specific account. The non-searchable condition contained the same information (financial statements and notes) in a PDF-formatted document, which did not have the search engine at the bottom of the screen. We manipulated recognition versus disclosure by having one of the two companies (Company Y) recognize stock option compensation expense on the face of the income statement (recognition condition) or disclose it in the notes (disclosure condition). Company X always disclosed stock option compensation expense in the notes. In the disclosure condition, where both companies disclosed stock compensation, company Y outperformed company X on four key income statement ratios. Given identical financial reporting, the difference in key ratios reflected economic differences between the two companies. In the recognition condition, where company X disclosed and company Y recognized stock option compensation, company X outperformed company Y on the four key income statement ratios unless participants adjusted company X's income statement to reflect stock option compensation, i.e., put the two companies on equal footing.

We examine two primary dependent measures: acquisition and investment decisions. We capture acquisition by asking participants in the questionnaire to identify whether company X and company Y disclosed or recognized stock option compensation information. Our acquisition dependent measure is the percentage of participants who correctly identify how each company reported stock option compensation information. We capture participants' investment decisions by asking them to allocate an investment of \$10,000 between company X and company Y. Our investment decision dependent measure is the percentage of \$10,000 participants invested in company Y.

Experimental Result

Out of 40 participants who accessed to materials in the XBRL-enabled search engine, 21 used the search engine to view footnote information. These 21 users set search group in our experiment. Other 19 users who were exposed to the search-

facilitating technology but selected not to use it, along with 20 users who were not exposed to search engine constitute non-search group. Table 1 shows The Effect of Search-Facilitating Technology on Users' Acquisition, and also Table 2 illustrates The Effect of Search-Facilitating Technology on Users' Investment Decisions.

Table 1. Percentage of participants who correctly identified whether company X and company Y recognized or disclosed stock option compensation information

Participants	Information's Placement		Difference(Disclosure-Recognition)
	Disclosure	Recognition	
Search group	87%	69%	-18%
Non-search group	94%	43%	-51%

Table 2. Mean percentage invested in company Y

Participants	Information's Placement		Difference(Disclosure-Recognition)
	Disclosure	Recognition	
Search group	57%	55%	-2%
Non-search group	67%	34%	-33%

Conclusion

Current paper investigates the potential for search-facilitating technology to improve nonprofessional investors' use of financial information in investment decisions, using the context of recognition versus disclosure of stock option compensation. We find that when stock option accounting varies between two firms, search technology contributes users to both acquire and integrate relevant information. Participants who used XBRL-facilitating technology were more likely to acquire footnote information, and also they were more likely to integrate the footnote information with related information on the face of the income statement when making judgments and decisions. When compared to participants who did not use search-facilitating technology, differences in investment decisions were detected. It can be seen that the implementation of XBRL improves the transparency of a firm's financial statement information and managers' choices for reporting that information.

Additionally there is a link between search-facilitating technology and managerial decisions apropos of financial reporting. Consequently, they predicted that the effect of XBRL on users' decisions may alleviate the benefits of managers lobbying for and choosing financial reporting approaches that artificially enhance the financial performance or condition of the firm. As XBRL increases the transparency of financial

reports in general and managers' financial reporting system choices and disclosure management efforts in particular, the disclosure reputation of firms along with users interpretation of the quality of financial information presented will be enhanced. Accordingly, as XBRL increases the transparency of management's financial reporting choices and disclosure management to the uses of financial information, the reliability and the reputation of their financial information will be more easily analyzed and evaluated. As a result, as the adoption of XBRL to support financial reporting process becomes more common, managers may become aware that their capital market positions are being affected; hence, their attitudes and decisions concerning financial reporting system choices and financial disclosure management may change. Provided managers conceive that disclosure management may damage firms' reputation and affect users' investment decision after XBRL adoption, they will become more likely to choose more precise or neutral accounting policies and procedures on their financial reporting. Alternatively, if managers perceive that XBRL adoption makes their financial disclosure management transparent, they will become less likely to engage in financial disclosure management that is harmful to the users of financial reports.

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