Teaching and educational notes

XBRL to enhance external financial reporting: Should we implement or not? Case Company X

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\textbf{Abstract}

The growing use of eXtensible Business Reporting Language (XBRL) represents a fundamental change for financial information flows. In a number of countries XBRL has already been put to practical use, for instance through implementation within the financial processes of non-listed companies. This fictional case is designed to help identify the benefits of XBRL. In addition, it helps to create knowledge about the different strategies of XBRL implementation and to apply this knowledge when making investment decisions on accounting information processes.

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\section{1. Introduction}

As Mr. CEO, the managing director of Company X, sits in his Helsinki office, he receives a phone call from a friend working in an innovative cloud-based IT firm. The friend is excited about his company’s recent developments in the area of XBRL-based financial reporting. “XBRL (eXtensible Business Reporting Language) allows the reuse of information from financial statements in an intelligent way”, says the vendor to Mr. CEO and continues: “we have case examples of companies that have been..."
able to reduce their book-keeping staff by 25% and the time needed to generate financial statements from five working days per statement to 30 min or less. All this is thanks to XBRL and our cloud-based reporting application!"

Mr. CEO is impressed about the offering but understands that his friend is a tough sales guy who will aggressively try to sell him software. Mr. CEO is, therefore, left wondering about the real benefits of this improved way of reporting financial statements to external users. He sees that it is important to give clear and precise information on the company’s performance to stakeholders, and, indeed, the current way of sending a pdf-file of his company’s financial statements to the business register – which then forwards the file on to external stakeholders of the company – is not the optimal way of doing this.

Being unsure about the business case and real benefits of XBRL, Mr. CEO turns to you for consultation. You must advise and assist him in his decision-making. Your task is, therefore, to:

(1) Build a business case for alternative choices, make a sound decision, and argue whether or not Mr. CEO should implement XBRL-based financial reporting in Company X.
(2) If you decide to recommend that Company X adopts XBRL, make a suggestion on how to implement it (timeline, strategy: bolt-on vs. integrated, other issues).

To enable you to do this, the teaching case provides (1) a brief introduction to XBRL with relevant links to data sources on this new reporting language, (2) a brief introduction to the systems being used at the moment in Company X, and (3) a more complete description of what is expected from you.

2. Setting the scene: what is XBRL? Reporting financial information to external users of data

2.1. Background on XBRL

XBRL stands for eXtensible Business Reporting Language. It is a language for the electronic representation and communication of business information, providing major benefits in the preparation, analysis, and communication of business information. An international, non-profit consortium of over 600 major companies, organizations, and government agencies has developed XBRL. The consortium continues to develop XBRL to better respond to the needs of today’s business reporting. XBRL is an open standard, free of license fees. It is already being put to practical use in many countries and the number of implementation projects of XBRL is growing rapidly around the world. For a current listing of projects, see http://www.xbrl.org/knowledge_centre/projects.

XBRL is a member of the family of languages based on XML, or Extensible Mark-up Language, which is a standard for the electronic exchange of data between businesses on the Internet. Under XML, identifying tags are applied to items of data so that they can be processed efficiently by computer software (XBRL International, 2011). Similarly, XBRL assigns human and machine-readable tags to the company information, which can be imported/exported between different systems in different companies and organizations (Pinsker, 2003). The technical specifications of XBRL are developed by the non-profit consortium and its working groups, while the country specific taxonomies are developed by accounting and technology experts in each country. This is due to the fact that the accounting rules vary from country to country and, therefore, XBRL has to be localized in each country separately. However, there are good guidelines on how to develop the taxonomies given by the non-profit consortium. This ensures that the taxonomies developed all around the world have enough commonalities to enable efficient comparison of business reports across countries. As a result, XBRL can be defined as a standard “for simplifying the exchange of financial statements, performance reports, accounting records, and other business information between software programs” (Hannon, 2005). XBRL has been named “a digital language of the business” by the people involved in its development and adoption (Hoffman & Strand, 2001).

The value of XBRL lies in its reusability, enabling business partners to reuse the data efficiently in the reporting supply chain (see Exhibit 1). To give two examples, using XBRL, banks have been able to shorten the time needed to process loan agreements from several weeks to just a couple of days (see,
e.g., Esser, 2012 and Willis, 2013). Similarly, using XBRL, analyst work at Microfinance Exchange that once took hours is now performed in seconds (Newman, Ritz, & Vridhachalam, 2008). In addition to time savings (see e.g. Pinsker & Li, 2008), XBRL is a powerful tool with which to analyze and compare data, enabling analysts and creditors to obtain a more accurate and comprehensive picture of the financial situation of the company being analyzed. Furthermore, XBRL improves the efficiency of auditing processes enabling, for example, continuous auditing, and thereby leading to lower auditing fees for users (Shan & Troshani, 2013).

To learn more on XBRL, there are plenty of introductory videos available on the Internet. For example: [http://www.youtube.com/watch?v=YlgTN2k375s&feature=youtu.be](http://www.youtube.com/watch?v=YlgTN2k375s&feature=youtu.be). As an example of XBRL tagging, see Exhibit 2. For additional reading, please see, for example, Markelevich and Riley (2013).

### 2.2. Alternative strategies for implementing XBRL

There are broadly two alternative ways of implementing XBRL: bolt-on and integrated. In addition, the company needs to decide whether to develop XBRL functionalities in-house or outsource to a third party.

With the **bolt-on approach**, the company's existing processes are used to generate the report. Relevant filing is generated in a traditional way using, for example, Microsoft Word or Excel or some legacy accounting software. Once finalized, the filing is converted into XBRL either internally using an XBRL mapping tool or externally by outsourcing the conversion process. “There are a number of XBRL mapping tools that can be used for the conversion. Because Excel is the most frequent format for this kind of report, the mapping tools usually take the form of an Excel add-on that enables line items in the Excel report to be dragged-and-dropped onto the XBRL taxonomy elements, creating a one-to-one or many-to-one mapping. The tool then processes this mapping to create the XBRL filing, and it can be saved and reused” (Garbellotto, 2009). “An XBRL mapping tool isn’t expensive – you can typically get one for around $1000 – but purchasing a tool is only the beginning: You need to learn how to use it, find your way around the XBRL taxonomy, and come up with a repeatable process to perform the mapping and the conversion” (Garbellotto, 2009).

The U.S. Securities and Exchange Commission (SEC) mandated the use of XBRL for domestic American filers that are listed on a US stock exchange. This mandate includes an extensive analysis of the estimated direct costs related to an XBRL filing. “The analysis is based on the experience of
participants in the SEC Voluntary Filing Program (VFP). In brief, the SEC indicates that the average cost of the first submission was $30,933, and the second submission averaged $9060. We have to remember that these were all large listed companies. The substantial drop for the second submission reflects

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What the XBRL example represents. This is the same XBRL data in human readable form.

Exhibit 2. Example of XBRL tagging (XBRL International 2011).
the learning curve between the first and second filings. The SEC warns, however, that the VFP participants who provided information for these statistics operate in XBRL-related businesses. Taking that into account, it suggests raising the average costs by about 20%. This estimate only includes direct costs. Indirect costs are mainly related to the efficiency of the approach, the implications in terms of maintenance and changes in requirements, and the return on investment (ROI) of the investment made in the XBRL technology” (Garbellotto, 2009).

As opposed to the bolt-on approach, with the integrated approach a company implements XBRL by taking XBRL-tagging to the account level in the accounting information systems. The integrated approach is geared towards internal data handling. The enabler for this is the XBRL Global Ledger (GL). XBRL GL taxonomy allows the representation of anything that is found in a chart of accounts, journal entries or historical transactions, financial and non-financial. It does not require a standardized chart of accounts to gather information, but it can be used to tie legacy charts of accounts and accounting detail to a standardized chart of accounts to improve communications within a business (XBRL, 2013). Instead of generating the end report and only then mapping the report to the appropriate XBRL taxonomy, in the integrated approach, the whole process is standardized, including the source data. Accordingly, in the integrated approach XBRL can be used for internal reporting. For example, it can be used to reduce errors in internal reporting and facilitate consolidation of the data from multiple departments and subsidiaries. As an example, the State of Nevada was able to reduce the time needed to produce monthly management reports from two weeks to less than an hour (Henderson, Sheetz, & Trinkle, 2012).

The drawback of XBRL GL is that it requires heavier investment in the tagging process and software. It is very difficult to estimate the cost of the integrated approach as the required level of investment depends heavily on the current systems in use and also on the size of the company.

In addition to the depth of XBRL’s integration (bolt-on vs. integrated), the company needs to decide whether to conduct the development of XBRL functionalities in-house or outsource reporting (implementation of XBRL) to an external third-party partner. Naturally, the benefit of outsourcing XBRL comes from the fact that the company need not invest in XBRL expertise.

However, as future technology evolves beyond simple financial reporting to more complex applications, the company might become more dependent on the outsourcing partner, thereby giving rise to additional external costs.

2.3. Emergence of electronic financial administration

Traditionally, processes in the financial administration have been done in paper format. Transaction documents (such as invoices) and government reporting (such as financial reports) have been passed on from one organizational entity to another using traditional postal services. To move from paper-based processes to electronic ones, during the last couple of decades, point-to-point systems (such as EDI – electronic data interchange) have been implemented which have allowed businesses to start exchanging business documents in electronic format. However, due to the relatively high costs of implementation, the adoption of these kinds of point-to-point systems has remained quite low, remaining mainly the luxury of larger companies.

More recently, the Internet, facilitated by the development of open standards such as the TCP/IP and XML, has steadily become a popular platform for inter-organizational coordination (Shapiro & Varian, 1999). These developments in technology have enabled companies to move from the EDI-based, highly partner-specific, point-to-point IOL (inter-organizational linkages) to the open-standard, less partner-specific network models using XML (Zhu, Kraemer, Gurbaxani, & Xu, 2006). The move from EDI-based solutions to open-standards is especially interesting from the point of view of small and medium-sized entities (SMEs) as these solutions enable SMEs to exchange business documents electronically with all their trading partners, not just point-to-point connections with some of the larger customers.

XBRL-based financial reporting is a typical example of an XML-based, open standard solution. As a result, XBRL is the type of technology that enjoys significant network effects. The network effect theory posits that the benefits derived from joining the network are positively associated with the size of the network. Network effects are both direct and indirect. An example of direct network effects is the
positive impact from the number of adopters of electronic government reporting on the benefits that an individual adopter can achieve by enabling the exchange of documents with a larger number of business partners. An example of indirect network effects is the increase in the number of compatible software and hardware solutions as the open standard diffuses. Naturally, the diffusion of open standards in the field of financial reporting contributes to the scalability of financial reporting systems.

Today, most of the innovative accounting information systems rely on the functionalities of the cloud. One of the most complete definitions of cloud computing is given by Marston, Li, Bandyopadhyay, Zhang, and Ghalsasi (2011):

[Cloud computing] is an information technology service model where computing services (both hardware and software) are delivered on-demand to customers over a network in a self-service fashion, independent of device and location. The resources required to provide the requisite quality-of-service levels are shared, dynamically scalable, rapidly provisioned, virtualized and released with minimal service provider interaction. Users pay for the service as an operating expense without incurring any significant initial capital expenditure, with the cloud services employing a metering system that divides the computing resource in appropriate blocks.

2.4. Recent developments in the European Union and Finland

Recently, there have been several developments in the European Union (EU) and Finland on XBRL-based financial reporting. The European Commission has evaluated whether or not to make XBRL mandatory for financial statement reporting by listed companies in the European Union (Klintz, 2012). The importance of XBRL-based financial reporting is highlighted by the attention it has received from the European Commission. Naturally, compared with paper-based financial reporting or e-mail based PDF-reporting, financial reporting in electronic, structure format presents numerous benefits for all parties, including processing cost savings, time and material savings and a decreased number of errors in the process.

In Finland, the development of XBRL has been taken forward in a consortium of 19 organizations (www.xbrl.fi). The Finnish approach started from the viewpoint of lowering administrative costs for the reporting companies. To this end an initiative named Standard Business Reporting (SBR) has been set up. The idea behind SBR is simple: instead of having different channels and formats for each government report, a common gateway is created so that the reporting company (filer) can use the “one-stop principle” and deliver all government reports using the same channel (see OECD, 2009 and Exhibit 3 for details). XBRL, on the other hand, is the technology implemented on top of the SBR so that it is possible to generate financial reports in machine-readable format. Taken together, the vision of SBR/XBRL is that companies can automate the generation of government reports directly from their accounting systems using structured format in a consolidated manner. An introductory video on SBR/XBRL is available at http://www.youtube.com/watch?v=zsbA8ag68pU.

Although XBRL is about global standardization, each national XBRL project has to establish its own country-specific XBRL taxonomy. This is because each country has its own idiosyncratic features and generally accepted accounting practices (GAAP). The Finnish XBRL taxonomy uses the tools provided by iXBRL (inline XBRL). In iXBRL, financial information is presented in a format that is both human and machine-readable. This is achieved by presenting the data (e.g. financial statements) in a normal document format but with XBRL “tags” embedded in the soft copy document.

3. Current financial reporting practices at Company X

3.1. Background of the company

Profile 1: Start-up: Company X is a start-up company in biotechnology, founded in 2010. The company has promising products and is on the verge of making them commercially available. The company is currently searching for funding and needs to raise capital. Banks and venture capital firms have, therefore, been approached. The company does not have any subsidiaries and the personnel
count is 10. Being a small company, an external audit of financial statements is not required. The company uses cloud-based accounting information systems (AIS) and an outsourced accounting service. The cloud-based AIS enables the entrepreneurs to see in real-time all transactions within the system.

Profile 2: Family-owned business: Company X is a family-owned company operating in the field of work-wear, office supply and cleaning services. Their main business consists of leasing work-wear to businesses and providing office supplies such as lobby mats etc. 1500 people are employed and the turnover has been steady during the last 10 years. The company is not aggressively looking for growth but wants to safeguard its future by staying competitive in the marketplace. In terms of accounting, the company has its own small financial department. This comprises 5 members of staff and the main software used is Excel. Company X needs an external audit of its financial statements.

Profile 3: Industrial company, group, listed company: Company X is an industrial group with one hundred subsidiaries spread all around the world. The company is listed on the Nasdaq OMX Nordic in Helsinki. It needs to file quarterly and annual financial reports. The personnel count of the group is 50,000 globally. The company has its own financial department and they use an Enterprise Resource Planning (ERP) system, which was introduced in 1995. The ERP system comprises, in total, 35 independent legacy systems. The business and financial systems were built independently because the original system architect in 1995 lacked a strong concept of machine-to-machine connectivity, meaning that employees must manually type in information and re-key data into the systems. The system ensemble has, therefore, been updated and patched by external consultants several times, leading to a network of independent systems.

3.2. Current financial reporting data flow at Company X

Company X assembles the different financial reports from its accounting information system (AIS). After information has been collected from the systems and the financial statements have been audited (except for Profile 1), the company generates a pdf-file from the system and forwards this to the
business register. The pdf-file is received and stored in electronic format in the repository of the business register. External stakeholders such as banks and other lenders, external investors, and value chain partners (e.g. customers and suppliers) can then access this information from the business register’s repository. However, as the data is in pdf-format, external stakeholders can only see the information, but cannot automatically analyze it using their analysis software. External users of this information must, therefore, transfer information manually into the financial statements of Company X in order to draw comparisons with other similar companies operating in the same industry.

In addition to the financial statements, Company X needs to file tax forms with the tax office and reports to regulatory agencies and Statistics Finland. These reports are generated in various formats, including structured data such as CSV (comma-separated values).

Overall, in assembling these reports from the AIS, Company X has noted that there exists a lot of overlapping manual work, which, in turn, generates a number of errors. Mr. CEO estimates that the accountants of Company X spend around 10 h (Profile 1), 20 h (Profile 2) and 150 h (Profile 3) per year correcting these errors in financial reporting. The information in the accounting information system is also used for internal reporting. Internal reports are generated on a monthly basis and are used in company management decisions. Exhibit 4 depicts the current financial reporting data flow for Company X.

The value chain of Company X comprises customer companies and suppliers. So far, only a few of the customer companies and suppliers have taken up XBRL in their financial reporting. None of the competitors of Company X have implemented XBRL. Company X’s auditors have already encouraged Mr. CEO to implement XBRL internally in order to improve controls and the reliability of data (except for Profile 1).

Although XBRL is not widely used in companies that belong to the value chain of Company X, the investment analysts who are following Company X are very familiar with XBRL and its functionalities. Similarly, the banks that have given loans to Company X are using XBRL in their daily operations.

Exhibit 4. Current financial reporting data flows for Company X.
4. The challenges going forward

It is clear to Mr. CEO that Company X needs to improve the state of external financial reporting. The current processes require too much manual intervention and are, therefore, error prone. How should Mr. CEO approach this? Should he give the green light to his friend working in this cloud-based IT company? “What the heck is a cloud-based system anyways?”, thinks Mr. CEO. “Will we become dependent on the IT provider if we move to this XBRL thing?”, he wonders. Mr. CEO turns to you with four very clear questions:

(1) What are the benefits of XBRL for the stakeholders?
(2) What are the benefits of XBRL for reporting companies?
(3) What is your evaluation of the different strategies available for Company X to implement XBRL (strategy: bolt-on vs. integrated, outsourcing vs. in-house, other issues)? and
(4) What is your decision on whether or not to implement XBRL for each profile and, if it is ‘yes’, how and to what extent would you implement XBRL in Company X?

Mr. CEO further asks, “What are the weaknesses of our current process?”,” How could our stakeholders benefit from XBRL?”,” What the overall pros and cons of XBRL to the companies in our value chain?” and “What risks might there be in implementing XBRL in our company?” As Mr. CEO gazed through his office window to the Baltic Sea, all these questions weighed heavily on his mind...

Appendix A. Teaching Note

This note serves as an instructor’s guide to ‘XBRL to Enhance External Financial Reporting: Should We Implement or Not? Case Company X’. The note presents suggested assignment questions for discussion and how they can be analyzed during the class.

Four assignments are outlined in the teaching case, requiring students to assist Mr. CEO of Company X to answer the questions:

(1) What are the benefits of XBRL for the stakeholders?
(2) What are the benefits of XBRL for reporting companies?
(3) What is your evaluation of the different strategies available for Company X to implement XBRL (strategy: bolt-on vs. integrated, outsourcing vs. in-house, other issues)? and
(4) What is your decision on whether or not to implement XBRL for each profile and, if it is ‘yes’, how and to what extent would you implement XBRL in Company X?

A.1. Learning objectives

1. Gain an understanding of how to use structured data flows, XBRL in this case.
2. Become familiar with the costs and benefits of (accounting) disclosure for different types of companies (profiles 1, 2, and 3).
3. Expose students to the pros and cons of XBRL.
4. Understand the importance of network effects (benefits exist only if there are sufficient usages).
5. Become familiar with different implementation strategies.

A.2. Implementation guidance

The students need to have an understanding of XBRL to complete the assignments outlined in the teaching case. There are plenty of introductory videos available on the Internet, and a link to one such video has been provided in the teaching case: http://www.youtube.com/watch?v=YlgTN2k375s&feature=youtu.be. For additional reading on XBRL, please see also, for example, Markelevich and Riley (2013). The teaching case is intended for use in accounting courses and in information systems.
courses. Ideally, the course would be in the intersection of accounting and information systems. The teaching case is suitable for both Bachelor’s and Master’s level courses.

An example of time allocation in a session of 90 min is as follows:

- The students should become familiar with the case before class.
- The instructor uses 20 min to introduce the class to the main concept and to the background of the case.
- The students are divided into groups of three. Each group is assigned one of the company profiles (profiles of companies: 1 Start-up, 2 Family-owned business and 3 Industrial company). Alternatively, each group may assess all three profiles. The groups are given 30 min to accomplish the assignment 4. The groups prepare a written answer to the assignment 4 (vis-a-vis the company profile) including:
  - The benefits of XBRL for Case Company X.
  - The benefits of XBRL for the stakeholders of Case Company X.
  - The implementation strategies available for Case Company X to implement XBRL.
  - The proposal to Mr. CEO on whether or not to implement XBRL.
- The instructor invites some of the groups to present their answers. The instructor also involves other groups in the discussion of alternative answers (20 min).
- The instructor wraps-up the key points of the case and discusses students’ answers in relation to the recommended solution (see Section 3 “Recommended Solution”).

A.3. Recommended solution

Please contact the authors for suggested solutions.

A.4. Evidence of efficacy

The teaching case materials come from the authors’ research, lectures and presentations on XBRL. The teaching case is being used at two universities in Finland at Master’s level in an information system and in an intermediate accounting course. Post-assignment assessment from 25 students indicated that the case has helped them to gain accounting and information system knowledge, and knowledge regarding the interconnection of the two. They felt that assessing all three company profiles is the most appropriate way of solving the case.

The students’ free comments section suggests that XBRL implementation provides an interesting learning context for students. Starting off the lecture with a brief YouTube video clip on XBRL

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(http://www.youtube.com/watch?v=YlgTN2k375s&feature=youtube) was perceived to be beneficial as an introduction to the case, albeit the case had been given to students for pre-reading one week before.

Sufficient time for group work was perceived as important by the students. If the group work in the class includes all three company profiles and preparation of the case presentation, students considered that approximately 40 min might be an appropriate amount of time. If students are given less time for group work, only one or two company profiles should be covered.

The descriptive statistics of post-assignment assessment (where 1 = strongly disagree and 5 = strongly agree) are presented in Table TN-1.

References


Further reading


Vasarhelyi, M., Chan, D., & Krahel, J. (2010). XBRL consequences to financial reporting, data analysis, decision support, and others. Rutgers University.