



Nicola Dalla Via

XBRL for Business Reporting

Accounting
& Business
Studies

Reference Framework,
Network Analysis, and New Trends

FrancoAngeli

Informazioni per il lettore

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A Gianna

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ABBREVIATIONS

| | |
|-------|--|
| AICPA | American Institute of Certified Public Accountants |
| AIS | Accounting Information System |
| API | Application Programming Interface |
| APRA | Australian Prudential Regulatory Authority |
| ARC | Accounting Reporting Complexity |
| CA | Continuous Auditing |
| CIK | Central Index Key |
| CPA | Certified Public Accountant |
| CSRC | China Securities Regulation Committee |
| DMS | Disclosure Management Solution |
| EAA | European Environment Agency |
| EBR | Enhanced Business Reporting |
| EC | European Commission |
| EDGAR | Electronic Data Gathering, Analysis, and Retrieval |
| EFRAG | European Financial Reporting Advisory Group |
| EPS | Earnings per Share |
| ERP | Enterprise Resource Planning |
| ESEF | European Single Electronic Format |
| ESMA | European Securities and Markets Authority |
| EU | European Union |
| FASB | Financial Accounting Standards Board |
| FDIC | Federal Deposit Insurance Corporation |
| GLEIF | Global Legal Entity Identifier Foundation |
| HMRC | Her Majesty's Revenue and Customs |
| HTML | HyperText Markup Language |

| | |
|---------|--|
| IAF | Internal Audit Function |
| IAS | International Accounting Standards |
| IASB | International Accounting Standards Board |
| IFRS | International Financial Reporting Standards |
| IIRC | International Integrated Reporting Council |
| IR | Integrated Reporting |
| IRS | Internal Revenue Service |
| iXBRL | Inline XBRL |
| KPI | Key Performance Indicator |
| KVK | Kamer van Koophandel |
| MD&A | Management's Discussion and Analysis |
| MOF | Ministry of Finance |
| NBA | Nederlandse Beroepsorganisatie van Accountants |
| NFRD | Non-Financial Reporting Directive |
| PDF | Portable Document Format |
| REA | Resource-Event-Agent |
| SAS | Stand-Alone Solution |
| SBR | Standard Business Reporting |
| SEC | Securities and Exchange Commission |
| SG&A | Selling, General and Administrative expenses |
| SIC | Standard Industrial Classification |
| SJR | Scimago Journals and Country Rank |
| SNA | Social Network Analysis |
| SOA | Service-Oriented Architecture |
| TAM | Technology Acceptance Model |
| TLM | Topical Link Model |
| TXT | Text |
| VIF | Variance Inflation Factor |
| VFP | Voluntary Filing Program |
| XBRL | eXtensible Business Reporting Language |
| XBRL GL | XBRL Global Ledger |
| XFRML | eXtensible Financial Reporting Markup Language |
| XHTML | eXtensible HyperText Markup Language |
| XML | eXtensible Markup Language |

1. INTRODUCTION: HISTORY AND BACKGROUND

This book aims to contribute to the literature on XBRL for financial and managerial reporting by extending the knowledge about its development, adoption, and impact on the capital markets. The book provides the readers with a clear picture of the studies published in the last twenty years in the accounting field identifying the main research areas and the potential research gaps. After a brief history of XBRL and its worldwide adoption over time, the book offers a systematic overview of the literature published in the period 2001-2020. The review is complemented by a bibliometric and social network analysis of co-authorships and co-citations with the purpose of mapping the most prominent authors and studies, and providing suggestions on the current dynamics and future perspectives. Focusing on the area of research about the market consequences of XBRL adoption, an empirical investigation has been conducted on the impact of XBRL on analysts' behavior. The book concludes with an outline of the most promising research directions and final thoughts on the most debated and emerging XBRL topics.

1.1. A brief history of XBRL

XBRL (eXtensible Business Reporting Language) is an open and global reporting standard designed to facilitate the publication, exchange, and processing of financial and non-financial information. It facilitates comparison across companies and over time by employing a standardized set of terms and concepts, and it allows automated data extraction, processing, and usage.¹

¹ Refer to the XBRL International website for more information on the XBRL characteristics: <https://www.xbrl.org/the-standard/what/an-introduction-to-xbrl/>.

An American CPA, Charles Hoffman, who began to develop prototypes for financial reporting based on XML in April 1998, is considered the “father” of XBRL.² The American Institute of Certified Public Accountants (AICPA) supported Hoffman’s project and asked him to prepare a formal business plan for making XML-based financial statements.³ In July 1999, the AICPA board of directors agreed to fund the project and a steering committee with 13 representatives of accounting firms and information technology companies was appointed. The year 2000 marked a turning point: the name of the project changed from eXtensible Financial Reporting Markup Language (XFRML) to XBRL, the initial consortium assumed the name of XBRL International, the number of members increased to 50, and the first taxonomy defining 1,880 concepts for financial reporting by commercial and industrial companies under US GAAP was published.

During the first international XBRL conference in London, held in January 2001, some concerns about the flexibility of the format and the possibility of extending its usage beyond the US border were raised. Japan contributed extensively to version 2.0 of XBRL specifications and allowed securities regulators to use XBRL-tagged financial information in their financial reporting system. The Australian Prudential Regulatory Authority (APRA) was the first regulator to implement XBRL in 2001, and in the same year several jurisdictions were formed: XBRL Australia, XBRL Canada, XBRL Germany, XBRL IASB, XBRL Japan, XBRL Netherlands, XBRL UK, and XBRL US.

To address the request by the Federal Deposit Insurance Corporation (FDIC) to create a centralized data repository for the call reports filed by banks, XBRL International developed in 2003 version 2.1 of the specifications. The FDIC system then went live in 2005. As of today, version 2.1 is the latest version of the specifications available, the only subsequent amendments being errata corrections.

China, in 2004, was the first capital market to adopt XBRL as its data standard, and it was quickly followed by the stock exchanges in Japan, Singapore, and South Korea. Two years later, the US Securities and Exchange Commission (SEC) decided to invest in an upgrade of the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system, and in the develop-

² Charles Hoffman published the first introductory books on XBRL, such as Hoffman (2006) and Hoffman and Watson (2009). Further, he received a special recognition award from the American Institute of Certified Public Accountants for his remarkable contributions to the development of XBRL (<https://www.journalofaccountancy.com/issues/2007/feb/hoffmanreceivesspecialrecognitionaward.html>).

³ Refer to Wu and Vasarhelyi (2004), Tie (2005) and Kernan (2009) for more information on the background and history of XBRL. More in detail, AICPA published a brief document on the story of XBRL based on a chronicle of Charles Hoffman and Louis Matherne (Kernan 2009).

ment of relevant US taxonomies. In 2008, the complete US GAAP taxonomy, with more than 12,400 XBRL tags and definitions for standard accounting terms, was published. In the same year, the SEC rules requiring public companies and mutual funds to file XBRL data were finalized.

In Europe, the European Commission endorsed the project in 2004, and new local jurisdictions were established. The Bank of Spain proposed the adoption of XBRL to meet Basel II requirements with more efficient reporting and improved data quality. Other central banks, from Belgium, France, Italy, Germany, and Greece, then got involved in the initiative.

1.2. Overview of XBRL adoption

Since the initial development of XBRL, the reporting format has been adopted around the world, in accordance with different implementation approaches. Further, the project itself has assumed a broader scope, going beyond the digitalization of the traditional financial statements.

At present, there are two complementary variations of XBRL. The one most users are familiar with is XBRL for financial reporting, which is employed to codify the financial information used for external reporting, such as financial statements and regulatory reports. Several national authorities have developed XBRL taxonomies based on their local regulations and accounting principles, and they now require companies to provide financial statement information in XBRL. The other variation, XBRL Global Ledger (XBRL GL), is a multilingual taxonomy independent from local norms and regulations.⁴ It is used to standardize the information necessary for any internal use, such as control and decision making, and for exchanging information with external stakeholders. In other words, XBRL GL provides a way to standardize all the granular information stored in enterprise resource planning (ERP) applications, accounting, and operational software. The combined use of XBRL GL and XBRL links specific operational tasks with end reports and allows users to drill down from the report to the underlying details, avoiding any loss of information and affording a complete audit trail. It also enables the creation of standardized business rules and controls that are applied consistently to data stored across different applications. These features enhance data quality and support continuous auditing and data monitoring.

⁴ For more information on XBRL GL, refer to (Cohen 2009), Dalla Via (2011) and Dalla Via and Garbellotto (2015).

Currently, millions of companies generate and submit to regulators digital versions of business reports in structured XBRL format. For instance, Italy published its first official taxonomy in 2009, and introduced the requirement of mandatory XBRL submission to the Chamber of Commerce (Business Register) of financial statements for small and medium sized companies. Then, in 2014, the taxonomy was extended to include, as well, the concepts that feature in the financial statement notes. The mandatory adoption of XBRL will be extended to public companies starting from the fiscal year 2020. This implementation approach is the opposite of the one used in the United States, where the Securities and Exchange Commission (SEC) required adoption by public companies early on. The phase-in approach of the SEC started in 2010 with large, accelerated filers with more than \$5 billion float, followed by all other large accelerated filers, and then all other listed companies.

Australia and the Netherlands introduced Standard Business Reporting (SBR) initiatives based on XBRL to simplify business reporting obligations. At the beginning, instead of focusing on financial statements, they decided to modify the reporting process of tax authorities. Tax declarations and other forms were transformed into digital XBRL-based documents. In the Netherlands, XBRL adoption was extended, in 2016, to the financial statements filed with the KVK (Kamer van Koophandel, Business Register). The country proved to be particularly innovative in this connection. To address the issue of the lack of assurance for XBRL financial statements (see Section 2.5), the Dutch association of auditors (the NBA, or Royal Nederlandse Beroepsorganisatie van Accountants) developed a specific taxonomy for the preparation of audit reports and related statements. Further, the NBA introduced a complete SBR assurance process which includes digital signatures and hash-based integrity checks.

XBRL International keeps track of the implementation initiatives around the world in the XBRL Project Directory.⁵ In the first phase of development, only a few countries decided to join the XBRL implementation efforts. Figure 1.1 shows the geographical distribution of XBRL initiatives in 2008. Among the 11 countries involved in these initiatives, four European countries were among the early adopters (Belgium, Germany, Italy, and Spain). Eight years later, in 2016, the picture changes significantly, and the number of countries adopting XBRL initiatives grows from 11 to 49 (see Figure 1.2).

⁵ Available online at: <https://www.xbrl.org/the-standard/why/xbrl-project-directory/>. A table with the worldwide XBRL initiatives is provided in the Appendix to this chapter.

Fig. 1.1 – Worldwide XBRL implementation in 2008



Fig. 1.2 – Worldwide XBRL implementation in 2016



Currently, there are about 58 countries that have implemented at least one XBRL initiative. Figure 1.3 provides an overview. Nine countries have joined the list of XBRL adopters in the past four years, demonstrating that the diffusion continues and that regulators are still working on the implementation of the digital reporting format and on expanding its scope. In particular, the following countries implemented XBRL initiatives for the first time during the period 2017-2020: Austria (2020), the Czech Republic (2020),

Georgia (2020), Iceland (2020), Lithuania (2020), Romania (2020), Russia (2018), Slovenia (2020), and South Africa (2018).

Fig. 1.3 – Worldwide XBRL implementation in 2020



The latest implementation efforts were stimulated by the European Directive 2013/50/EU, which modifies the Directive 2004/109/EC on the harmonization of transparency requirements for information about issuers whose securities are admitted to trading on a regulated market. The later Directive required issuers to prepare their annual financial reports in a single electronic reporting format. The European Securities and Markets Authority (ESMA) was assigned the responsibility of developing regulatory technical standards and providing specifications for the new electronic reporting format. As a result, ESMA decided to adopt the European Single Electronic Format (ESEF) as an electronic reporting format in which issuers on EU regulated markets will prepare their annual financial reports for financial years starting on or after 1 January 2020. The ESEF format embeds XBRL-tagged accounting concepts in human-readable xHTML files using Inline XBRL technology. Thus, the new format offers the benefits of XBRL tagged data combined with a humanly readable presentation of annual financial reports. The taxonomy to be used for ESEF is based on the IFRS Taxonomy, prepared and annually updated by the IFRS Foundation; it provides issuers with a hierarchical structure to be used for classifying financial information. The ESEF taxonomy is available in all the official languages of the European Union. The mandatory block tagging of financial statement notes will be implemented at a later stage, in 2022.

According to the XBRL Project Directory of XBRL International, the Netherlands is the country with the highest number of XBRL-related initiatives (15 initiatives), followed by Spain with 8, and four other countries with 7 (China, France, Germany, and the United Kingdom). In the Netherlands, XBRL has been implemented by several of authorities and organizations covering different fields, such as the business register, the financial regulator, the capital market authority, the tax authority, and government agencies. In general, the majority of XBRL initiatives involve capital market authorities (52) and financial regulators (82).

Currently, XBRL International is a not-for-profit organization managed by a Board of Directors. It consists of more than 20 XBRL jurisdictions, one affiliate organization (XBRL Europe), and two Boards (Best Practices and XBRL Standards), as well as numerous working groups.

1.3. Outline of this book

With this introduction having provided historical context for the adoption of XBRL, the second chapter reviews the literature on XBRL that has been published in peer-reviewed accounting and information systems journals. The aim of the review is to identify the main research areas, past and current trends, and opportunities for future study vis-à-vis XBRL. The time period covered by the review includes publications from 2001 up to today. The first studies focused on the firm-level determinants of XBRL adoption and on the organizational and technological changes triggered by XBRL introduction. After the mandatory adoption, one stream of studies focused on the impact of XBRL filings on the capital markets. Another stream of research examined the quality of filings and related issues, such as the occurrence of errors and the introduction of taxonomy extensions. In relevant auditing studies, the assurance of XBRL filings and the use of XBRL data in the auditing process are key topics. For instance, in most countries, regulations do not require an audit of XBRL filings, with consequences for the accuracy and reliability of data. Finally, the recent SEC adoption of Inline XBRL represents an advancement in XBRL reporting and provides new research opportunities.

Complementing the literature review developed in the previous chapter, chapter 3 presents the results of a literature network analysis. The purpose of the chapter is to develop a systematic quantitative analysis depicting the knowledge structure and the intellectual progress of XBRL research. After collecting information about titles, author(s), affiliation(s), keywords, citations, and reference lists, I conduct a bibliometric analysis to identify the

most important authors in the field and to construct a semantic map; this map can be used to discover linkages among relevant topics and trace research tendencies over time. Further, I deepen the investigation by analyzing co-citations and co-authorship of articles with social network analysis tools. I use social network analysis (SNA) to examine the structural characteristics of the co-authorship network, including its density and cohesion. SNA allows the analyst to identify the core actors in a network and to find and interpret patterns in the social ties among them. Specific measures, such as centrality, provide information about the role of each author and his/her influence and position within networks. For instance, an author can have a central position because of the large number of co-authored studies to which he or she has contributed; but he/she may also be central as a “bridge” between other authors not otherwise connected, thereby becoming central by facilitating the connection of authors within a network. In addition to revealing individual characteristics of actors, SNA measures also identify whether the cohesion of a network is organized around a particular actors or cluster of actors. The analysis thus reveals who are the most prominent authors in the field and how they cooperate. Finally, co-citation analysis aims to find out the knowledge base of a specific field and to identify the major topics that have been most discussed in past years.

The fourth chapter presents an empirical investigation of the benefits of mandatory adoption of XBRL in the United States and its impact on analysts’ behavior. All public companies in the US have been required to submit to the SEC their 10-Q and or 10-K financial reports in XBRL format. In particular, companies became subject to the interactive data requirement in three phases. Phase I filers were large accelerated filers with more than \$5 billion float and a fiscal period ending on or after June 15, 2009. Phase II companies were all other large accelerated filers with a fiscal period ending on or after June 15, 2010. All other companies with a fiscal period ending on or after June 15, 2011 were included in Phase III. Chapter 4’s analysis complements previous studies on the market consequences of XBRL adoption by investigating a sample of Phase II and Phase III filers in the period 2007-2013. The Phase II sample comprises 4,113 firm-year observations, representing 749 companies, whereas the Phase III sample includes 7,655 firm-year observations, representing 1,619 companies. The findings indicate that XBRL adoption is positively associated with analyst following as well as analyst forecast accuracy. Further, the results show that analyst forecast behavior changes according to the XBRL adoption phase and has important implications for authorities and market regulators. To assist academic researchers in obtaining and exploiting XBRL data, the

Appendix provides a few practical suggestions for downloading financial data in XBRL format from Open Data repositories.

The fifth chapter concludes the study by noting current trends in the field and outlining some avenues for future research.

Appendix: Worldwide XBRL Initiatives

| Country | Category of the initiative | Year | Country | Category of the initiative | Year |
|-----------|----------------------------|------|----------------|----------------------------|------|
| Australia | Financial Regulator | 2001 | Cyprus | Financial Regulator | |
| Australia | Capital Market | 2010 | Czech Republic | Capital Market | 2020 |
| Australia | SBR | 2010 | Denmark | Business Registrar | 2011 |
| Australia | Tax Authority | 2013 | Denmark | Financial Regulator | 2014 |
| Austria | Capital Market | 2020 | Denmark | Others | 2015 |
| Belgium | Financial Regulator | 2007 | Denmark | Financial Regulator | 2016 |
| Belgium | Tax Authority | 2011 | Denmark | Capital Market | 2020 |
| Belgium | Financial Regulator | 2014 | Estonia | Business Registrar | 2010 |
| Belgium | Financial Regulator | 2016 | Estonia | Financial Regulator | 2014 |
| Belgium | Capital Market | 2020 | Estonia | Financial Regulator | 2016 |
| Brazil | Financial Regulator | 2014 | Estonia | Capital Market | 2020 |
| Bulgaria | Capital Market | 2020 | EU | Financial Regulator | 2014 |
| Bulgaria | Financial Regulator | | EU | Financial Regulator | 2016 |
| Chile | Financial Regulator | 2009 | Finland | Financial Regulator | 2014 |
| Chile | Financial Regulator | 2012 | Finland | Financial Regulator | 2016 |
| China | Capital Market | 2008 | Finland | Business Registrar | 2019 |
| China | Capital Market | 2010 | Finland | Government Oversight | 2019 |
| China | Financial Regulator | 2012 | Finland | Capital Market | 2020 |
| China | Business Registrar | 2014 | France | Financial Regulator | 2010 |
| China | Financial Regulator | 2016 | France | Financial Regulator | 2014 |
| Colombia | Financial Regulator | 2015 | France | Financial Regulator | 2016 |
| Colombia | Business Registrar | 2015 | France | Financial Regulator | 2017 |
| Croatia | Capital Market | 2020 | France | Capital Market | 2020 |
| Croatia | Financial Regulator | | France | Financial Regulator | |
| Cyprus | Capital Market | 2020 | Georgia | Financial Regulator | 2020 |

(continued)