



Vaasan yliopisto
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**XBRL and Disclosure Management System
implementation and their effect in group
reporting process. CASE: Company XXXX**

School of Accounting and Fi-
nance
Master's thesis in Accounting
and Auditing

Vaasa 2021

UNIVERSITY OF VAASA**School of Accounting and Finance**

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Title of the thesis:	XBRL and Disclosure Management System implementation and their effect in group reporting process. CASE: Company XXXX		
Degree:	Master of Science in Economics and Business Administration		
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Year:	2021	Sivumäärä:	84

ABSTRACT:

The purpose of this study is to research how the single electronic reporting format in accordance with the European Single Electronic Format mandate affect the external reporting practices in publicly listed companies in the European region and what kind of changes the ESEF mandate causes in the Company XXXX. In addition to this, another significant goal of this research is to describe how the implementation of the Disclosure Management System affects Company XXXX's external reporting process and what changes, risks and opportunities it creates for the reporting process. The study is highly topical, as according to the ESEF mandate all European publicly listed companies must report their financial statements and annual reports in a single electronic format from the 2020 financial statements onwards. The financial statements shall be prepared in XHTML format and the IFRS consolidated financial statements included in the XHTML document must be marked with XBRL tags based on ESEF taxonomy.

Theoretical background of this research is based on previous research material focusing on financial reporting, XBRL as well as what type of different approaches can be used within the implementation of XBRL. Theoretical sections also include previous literature on what type of changes, challenges as well as the opportunities XBRL reporting has caused in group reporting processes. Besides academical research material, the governmental sources as well as different accounting organizations such as IFRS foundation has been used as an information sources in this research. On the other hand, empirical material of this research is based on the participatory observation, internal documentation, project documentation and formal and informal discussion with the other project staff and key finance personnel in Company XXXX. The analysis and the results arising from the research material reflect to a significant extent the perceptions of Company XXXX's project personnel as well as the researchers own observations.

As a result of the research, the European Single Electronic Format was seen to harmonize the financial reporting of publicly listed companies operating in Europe, thus improving the comparability between the companies. The most significant changes in the companies' reporting processes were related to the XBRL tagging of IFRS consolidated financial statements and delivery of annual financial statements in the XHTML format. The XBRL tagging was executed in Company XXXX as an in-house process by tagging the IFRS consolidated financial statements by using the implemented Disclosure Management System. Overall, the implementation Disclosure Management System and XBRL tagging caused significant changes in the group reporting process as it went through an extensive amount of changes. The most significant changes were related to the successful partial automation of the external reporting process as well as by shifting the work more in to in-house process. The research results were able to increase the theory of XBRL in Europe and emphasize the importance of automation in financial reporting.

KEYWORDS: ESEF, XBRL, Disclosure Management System, Financial Reporting

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Valmistumisvuosi:	2021	Sivumäärä:	84

TIIVISTELMÄ:

Tämän tutkimuksen tarkoituksena on tutkia, kuinka yhtenäinen sähköinen raportointimuoto (European Single Electronic Format) vaikuttaa ulkoiseen raportointiprosessiin julkisesti noteeratuissa yrityksissä Euroopan alueella ja millaisia muutoksia ESEF:n käyttöönotto aiheuttaa Yritys XXXX:ssä. Tämän lisäksi tutkimuksen toinen merkittävä tavoite on kuvata, kuinka Disclosure Management -järjestelmän käyttöönotto vaikuttaa Yritys XXXX:n ulkoiseen raportointiprosessiin ja mitä muutoksia, riskejä sekä mahdollisuuksia käyttöönotosta syntyy. Tutkimus on hyvin ajan-kohtainen, koska ESEF:n toimeksiannon mukaan kaikkien Eurooppalaisten pörssiyritysten on raportoitava tilinpäätöksensä ja vuosikertomuksensa yhtenäisessä sähköisessä muodossa vuoden 2020 tilinpäätöksestä lähtien. Tilinpäätös on laadittava XHTML-muodossa ja XHTML-asiakirjaan sisältyvä IFRS-konsernitilinpäätös on merkittävä XBRL-tunnisteilla ESEF-taksonomian mukaisesti.

Tämän tutkimuksen teoreettinen tausta perustuu aikaisempaan tutkimusmateriaaliin, joka on keskittynyt taloudelliseen raportointiin, XBRL:ään sekä XBRL:n erilaisiin implementaatiotapoihin. Teoriaosuus sisältää myös aikaisempaa kirjallisuutta siitä, minkä tyyppisiä muutoksia, haasteita ja mahdollisuuksia XBRL-raportointi on aiheuttanut konserniraportoinnissa. Akateemisen tutkimusmateriaalin lisäksi tutkimuksen tietolähteinä on käytetty viranomaislähteitä sekä laskentatoimeen keskittyneitä säätiöiden materiaalia, kuten IFRS-säätiön. Tämän tutkimuksen empiirinen aineisto perustuu osallistuvaan havaintoon, sisäiseen dokumentaatioon, projektidokumentointiin sekä muodolliseen ja epäviralliseen keskusteluun yrityksen muiden projektihenkilöstön ja avainhenkilöiden kanssa. Tutkimusmateriaalin analyysi ja tulokset heijastavat merkittävässä määrin Company XXXX:n projektissa mukana olevan henkilöstön sekä tutkijan havaintoja.

Tutkimuksen tuloksina Eurooppalaisen sähköisen raportointimuodon nähtiin yhtenäistävän Euroopassa toimivien pörssiyritysten taloudellista raportointia ja parantavan siten yritysten vertailtavuutta. Merkittävimmät muutokset yritysten raportointiprosesseissa liittyivät IFRS-konsernitilinpäätösten XBRL-merkintään ja vuositilinpäätösten toimittamiseen XHTML-muodossa. XBRL tunnisteiden merkintä suoritettiin Yritys XXXX:n sisäisenä prosessina merkitsemällä IFRS-konsernitilinpäätöksen päälaskelmat käyttöönotetun Disclosure Management System -järjestelmän avulla. Disclosure Management -järjestelmä ja XBRL-merkinnät toivat mukanaan merkittäviä muutoksia konsernin raportointiprosessiin. Merkittävimmät muutokset liittyivät ulkoisen raportointiprosessin onnistuneeseen osittaiseen automatisointiin sekä työvaiheiden keskittämiseen yrityksen sisäiseksi prosessiksi. Tutkimustulokset pystyivät lisäämään XBRL-teoriaa Euroopassa ja korostamaan automaation merkitystä taloudellisessa raportoinnissa.

AVAINSANAT: ESEF, XBRL, Disclosure Management System, Financial Reporting

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Abbreviations

XBRL	eXtensible Business Reporting Language
iXBRL	inline eXtensible Business Reporting Language
IFRS	International Financial Reporting Standards
ESMA	European Securities and Market Authority
ESEF	European Single Electronic Format
XHTML	eXtensible Hypertext Markup Language
IASB	International Accounting Standards Board
IAS	International Accounting Standard
EU	European Union
XML	Extensible Markup Language
MD&A	Management Discussion & Analysis
EBRC	Enhanced Business Reporting Consortium
SEC	Securities and Exchange Commission
US G.A.A.P	US Generally Accepted Accounting Principles
FPM	Financial Planning and Management
Q1/2020	First quarter of 2020
Q2/2020	Second quarter of 2020
Q3/2020	Third quarter of 2020

1 Introduction

1.1 Background of the study

Financial reporting is constantly evolving into an increasingly digitalized and standardized format. The most significant reforms and standardizations in the last decades have been, for example, the widespread adoption of IFRS standards. This study focuses on the eXtensible Business Reporting Language (further, XBRL) and its large-scale implementation, which is increasingly aimed at digitizing and harmonizing the financial reporting of publicly listed companies in the EU region. In the past, XBRL in terms of external financial reporting has been used in China, USA, Japan, Spain, Canada, Ireland and Denmark, among others and all in all, XBRL is already being used globally in more than 50 countries. In addition, although that XBRL is used for financial reporting by individual EU Member States, it has not been common and harmonized within all EU countries. (Beerbaum & Piechocki 2017; Di Fabio, Roncagliolo, Avallone & Ramassa 2019; Eur-LEX 2019). Historically, the emergence of XBRL can be traced back to 1998 (Wang & Wang, 2017).

However, the above situation is changing, as all publicly traded companies operating in the EU are required to prepare Annual Financial Reports with an electronic reporting format from 2020 and onwards. In the Transparency Directive (2013/50/EU) the European Commission prescribed that the annual financial reports should be published in a single electronic format from 2020 onwards¹. To achieve this, the Transparency Directive (2013/50/EU) instructed the European Securities and Markets Authority (further, ESMA) to research how the single electronic reporting format could be implemented in Europe. (Beerbaum & Piechocki, 2017; Di Fabio, Roncagliolo, Avallone & Ramassa 2019.)

¹ At the end of the study in December 2020, the European Parliament and the Council agreed to postpone the application of the ESEF for one year to the financial year beginning on or after 1 January 2021 (See. European Commission 2020; Finanssilvonta 2020). This study and the project were carried out on the assumption that the mandate would take effect according to the original schedule. The postponement did not affect for the project.

According to the Transparency Directive, ESMA had to submit a proposal to the European Commission for the implementation of the European Single Electronic Format by 31 December 2016. To comply this, ESMA launched a public consultation on the basis of which ESMA would assess the most appropriate approach to implementation for the ESEF. On the basis of the consultation paper, ESMA proposed the introduction of inline XBRL, or iXBRL technology to be used in single electronic reporting approach in Europe. (Beerbaum & Piechocki 2017.)

And now, as 2020 moves forward, this above-mentioned mandate of electronic reporting is coming into effect. This makes the study particularly topical and important. This research will address the ongoing implementation of the ESEF and XBRL in the Company XXXX while also weighing the risks as well as the opportunities arising from the implementation from a financial reporting perspective.

1.2 Purpose of the study

The purpose of this thesis is to study how the transition to ESEF reporting will affect the financial reporting processes in a publicly listed Company XXXX. The research focuses on describing the implementation process of XBRL and Disclosure Management System and what these changes causes for the Company XXXX's reporting process. Also, one of the important sub purposes for this thesis is to identify the risks and challenges as well as the opportunities that the implementation of the ESEF reporting poses for the CASE company.

Company XXXX has implemented a third-party service as a software disclosure management system that is used to automate interim and annual disclosure preparation process and XBRL tagging for IFRS consolidated statements in annual financial statements. The use of this service eventually enables the creation of finalized XBRL tagged XHTML reports for the purpose of national database delivery, in this case the delivery to Nasdaq Helsinki. Immediately at the beginning of this study, it was found that system implementation also enables non-regulatory benefits for the Company XXXX. Therefore, one of the

important goals of this thesis is to identify how the implemented disclosure management system can be utilized more widely in the company, for example in terms of internal reporting and quarterly reporting process. In addition to this, the company has identified challenges and risks in the introduction of the new reporting process, therefore identifying potential risks and challenges is important part of the study.

The aims of the thesis are achieved by answering the following research questions:

- What is the purpose of European Single Electronic Format reporting and how it impacts the regulatory financial reporting?
- How the implementation of XBRL is executed in the Company XXXX?
- How the XBRL tagging and Disclosure Management System is changing the group reporting process and what challenges and opportunities it causes in Company XXXX?

1.3 Structure of the study

This thesis is divided into five section. The first section presents the introduction of the research, which reviews the background and purpose of the research. In addition, the section defines research questions and research structure. The second section of the thesis delves into the theory of research. The theoretical part focuses on processing previous studies from the areas of financial reporting, ESEF and XBRL. The third section of the research presents the research methodology, data collection and data analysis methods. The fourth part itself contains the results from the empirical part while in the last section researcher presents conclusions, further research proposals and limitations for the study.

2 Literature review

This section reviews financial reporting processes, ESEF and XBRL focusing on the different drivers affecting the development of the XBRL implementation in Europe. The section also examines the implementation process of XBRL technology and its effects on the company's financial reporting.

2.1 Financial reporting

The revised Conceptual Framework of Financial Reporting by IASB defines the purpose of financial reporting, which is to provide useful financial information about the reporting entity for its existing and potential investors, lenders and other creditors. Further on, the stakeholders are able to use this information in their own decision making processes in order to completely assess the company's financial position. In addition to the above mentioned stakeholders, also additional third parties, such as members of the public and regulators may find the entity's financial reports useful, but still, the financial reports are not primarily prepared for their purpose. (Conceptual Framework, 2018). Further due to the nature of this study, I will discuss briefly about the financial statements and the preparation process of quarterly and annual disclosures and the factors affecting them.

2.1.1 Financial accounting and financial statements

The financial statements can be seen as a final product of financial accounting which object is to provide financial information about the reporting entity's assets, liabilities, equity, income and expenses (Conceptual Framework, 2018). As a basis, the financial statements has to be prepared with the assumption that the reporting company is going concern and it will continue to operate in the future. The International Accounting Standards (further, IAS) and more precise one of its sub section, IAS 1, defines the overall requirements for the presentation and content of financial statements. IAS 1 requires entities that comply with it to present a complete set of financial statements at least once a year including the previous year's comparative figures. Based on the standard, the

complete set of financial statements includes the following areas: A statement of financial position at the end of the period, a statement of profit and loss and other comprehensive income for the period, a statement of changes in equity for the period, statement of cash flows for the period, notes comprising a summary of significant accounting policies and other explanatory information and a statement of financial position at the beginning of the previous comparative period when the issuing entity is adopting an accounting policy retrospectively or if doing retrospective restatements or reclassifies items in its financial statements. (IFRS 2020a).

The preparation of quarterly and annual financial statements is a time and resource-consuming process. Indeed, e.g. managers of publicly traded companies spend considerable amount of time for preparing regulated disclosures for external stakeholders. In addition to regulated disclosures, the publication of interim and annual financial statements is often combined with conference and earnings calls, which increase the use of time and resources during the preparation of interim and annual external reporting disclosures. The amount of resources required is thus significantly affected by the extent of which the company is willing to describe its financial operating environment, strategy, etc. in addition to the regulatory information. (Amel-Zadeh, Scherf & Soltes, 2019).

In a study related to the disclosure creating process, Amel-Zadeh et al. (2019) found that more than 65% of companies participating in the study begin the preparation of earnings material even before the preliminary financial results are known which emphasizes the resource consuming process. The preparation of disclosures is also closely influenced by the individuals involved in the preparation process. In this regard, Bamber, Jian, and Wang (2010) saw in particular that persons having CEO and CFO background have influence in how and what is presented outside of the regulatory framework. In turn, Amel-Zadeh et al. (2019) observed significant variations among different firms in how individual managers are able to influence the preparation of corporate disclosures. This study will later discuss the benefits arising from implementing XBRL and external reporting

automation, which can simplify and streamline the resource intensive disclosure preparation process.

2.1.2 International Financial Reporting Standards

In 2001, the International Accounting Standards Board (IASB), former International Accounting Standards Committee (IASC) began developing International Financial Reporting Standards (IFRS). The IFRS standards are constructed to be used for the general purpose financial statements as well as other financial reporting for profit oriented companies. Other financial reporting includes the additional information provided outside the financial statements which assists information users to interpret the financial statements while also improving the ability to conduct considered economic decisions. IFRS standards are designed for profit oriented organizations, nevertheless also nonprofit organizations can find standards useful and align with them. Profit oriented organizations are defined as an entities which are engaged in commercial, industrial, financial and similar activities whether organized in corporate or in other forms. (IFRS, 2020b). IFRS is maintained by IFRS Foundation, which has three-tier governance structure (See. Figure 1.) including independent standard setting Board (IASB) which is governed and overseen by trustees (IFRS Foundation Trustees) accountable for monitoring board (IFRS Foundation Monitoring Board). (IFRS, 2020c).

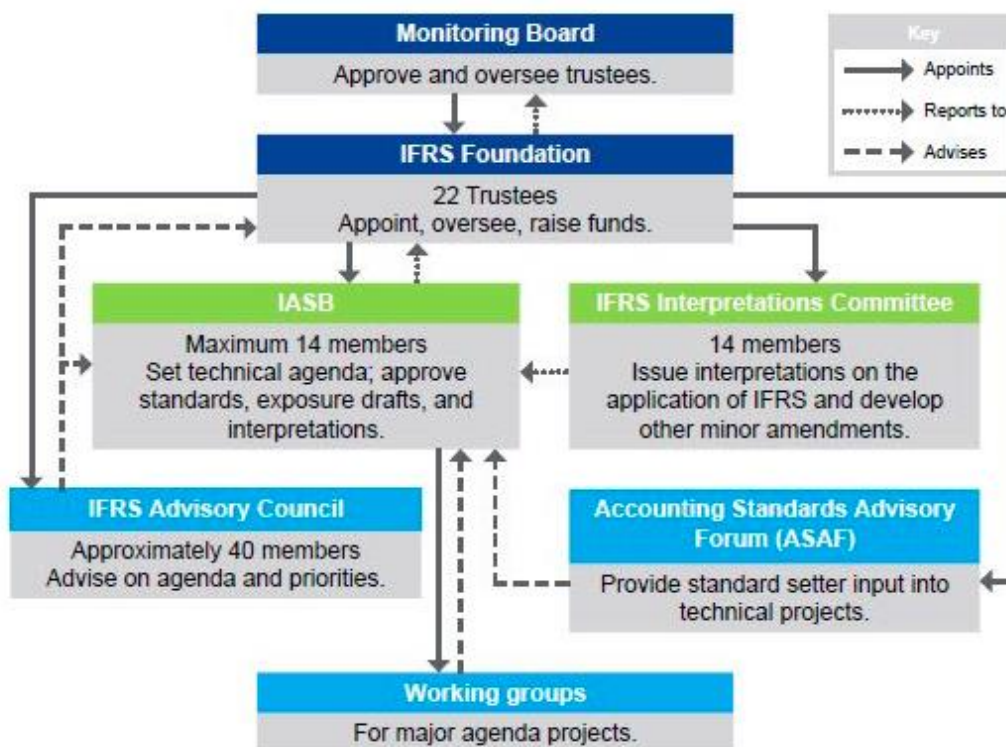


Figure 1. Structure of IFRS Foundation (Deloitte, 2020).

Quickly after implementing the IFRS, the harmonization of financial reporting already improved as a result of voluntary adoptions of the standards. In addition, numerous large stock exchanges such as London, Frankfurt, Zurich, Hong Kong and many others started to accept financial statements prepared in line with IFRS. Also, in Europe and Australia the regulators announced the mandatory implementation of IFRS in consolidated financial statements in 2005. As a result of this, from January 1, 2005 onwards, all European publicly listed companies have been instructed to issue financial statements in accordance with IFRS. Besides these, the companies in more than 30 other countries were also permitted or required to adopt IFRS standards. (Hope, Jin & Kang 2006). In this regard, as early as 2006, Hope et al. (2006) recognized that global accounting harmonization has emerged in a number of different countries through the world due to the IFRS adaptation. This development is seen in a positive sense, as the main purpose of IFRS is to harmonize and improve the quality of financial reports which also facilitates the growth of equity market within the EU. The harmonization also significantly improves the international comparability of financial statements. (Haapamäki, 2018; Hope et al. 2006).

2.2 European Single Electronic Format (ESEF) and European Securities and Markets Authority

2.2.1 ESEF

The European Single Electronic Format is an electronic reporting format that all publicly listed companies operating in EU regulated markets must comply when publishing annual financial reports from the financial year of 2020 onwards². The establishment of the ESEF dates back to the Transparency Directive adopted by the European Commission in 2013. (ESMA 2020a.). ESEF contains specific requirements that specify how issuing companies must report certain information in their annual financial reports.

Based on ESEF mandate, annual financial reports must be submitted in XHTML format, which means that the report has to be available and accessible in a web browser. In addition, the consolidated financial statements defined in International Financial Reporting Standards (further, IFRS) in the annual financial report must be tagged with a unique XBRL tags which can be found from the ESEF taxonomy. More detailed, 2020 and onwards the tags should be embedded into the primary financial statements, which include the income statement, balance sheet, statement of cash flows, and statements of changes in equity. In addition, from 2022 onwards, notes in annual financial reports has to be marked with block tags covering the individual note tables (Deloitte, 2020b; ESMA 2020b).

2.2.2 ESEF Taxonomy

In order to comply with the ESEF mandate, companies have to tag their primary consolidated financial statements in annual financial reports. The tags used in the mark-up

² At the end of the study in December 2020, the European Parliament and the Council agreed to postpone the application of the ESEF for one year to the financial year beginning on or after 1 January 2021 (See. European Commission 2020; Finanssivalvonta 2020). This study and the project were carried out on the assumption that the mandate would take effect according to the original schedule. The postponement did not affect for the project.

process are defined in the ESEF taxonomy, which core is based on the IFRS taxonomy. (Beerbaum & Piechocki, 2017; EUR-Lex 2019). Regulation (EC) No 1606/2002 of the European Parliament and of the Council required publicly traded companies governed by the law of a Member State to comply with IFRS in the preparation of their consolidated financial statements. The aim of the IFRS standards is to improve the transparency and comparability of the financial statements. Due to comparability and the well-established nature of the IFRS taxonomy, the core of ESEF taxonomy is based on the IFRS taxonomy (See. Figure 2.) The publication of the taxonomy used for XBRL tagging is the responsibility of ESMA and they are entitled publish the XBRL taxonomy files both in machine-readable and human-readable form on their websites. (EUR-Lex 2019.)

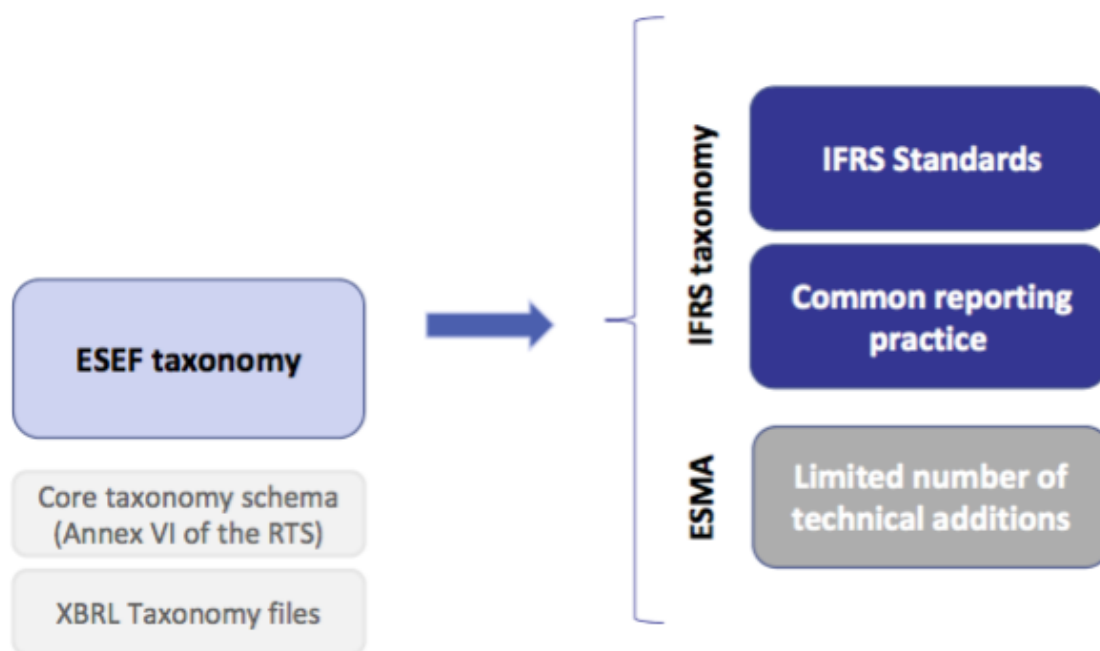


Figure 2. ESEF taxonomy (Sciortino, 2019).

For reasons of transparency, accessibility and comparability, organizations that publish IFRS consolidated financial statements should be allowed to record the information in the financial statements as accurately as possible. Marking accuracy is determined by various standards dealing with the minimum level of accuracy, according to which the primary statements of the consolidated financial statements must be marked with tags

in detail and the notes by block tagging. However, block tagging does not deny the possibility to tag the notes at a more detailed level. (EUR-Lex 2019.)

When tagging the items, issuers have to use the most suitable and from accounting perspective, the closest tag found from the taxonomy. If a directly suitable tag cannot be found, the issuer must create a modified version of the already existing tag and attach it from the accounting point of view to the closest tag. The previous processes outcome is called taxonomy extension (XBRL Glossary, 2020). The above tagging process enable uniformly structured as well as machine-readable data. As and outcome, these XBRL tags has to be embedded into an XHTML document, which can be produced with information technology systems designed for this purpose. (ESMA 2020a.)

2.2.3 ESMA

ESMA stands for European Securities and Markets Authority which is an independent authority of EU. The main purpose of ESMA is to secure the stability of the European Union's financial structure by strengthening investor protection and emphasizing a stable and systematic financial market in the EU region (ESMA 2020). ESMA's role in the development of XBRL is based on the European Transparency Directive (2013/50/EU), which requires all publicly listed companies located in the EU region to prepare annual financial reports with the single electronic reporting format. This directive is mandatory from 1st of January 2020³. (Di Fabio, Roncagliolo, Avallone & Ramassa (2019).

European Commission instructed ESMA to set up a cost-benefit analysis and development of standards in order to move to a single electronic reporting format in the EU. In 2015, ESMA issued a Consultation Paper setting out the main objectives of the open public consultation, policy objectives, an assessment of current electronic reporting,

^{3 3} At the end of the study in December 2020, the European Parliament and the Council agreed to postpone the application of the ESEF for one year to the financial year beginning on or after 1 January 2021 (See. European Commission 2020; Finanssivalvonta 2020). This study and the project were carried out on the assumption that the mandate would take effect according to the original schedule. The postponement did not affect for the project.

possible options in the light of technical developments in financial markets and telecommunication. The Consultation Paper included questionnaire that received 110 comments from the recipients. (ESMA, 2015).

Based on Consultation Paper results, ESEF implementation was well welcomed by a majority of the commentators. Also, 88% of the commentators saw IFRS Taxonomy as a suitable base for ESEF taxonomy. In the Consultation Paper, ESMA presented three different options for the presentation of the annual financial reports. These three options were: 1. Annual Report to be presented in PDF format, 2. Annual Report to be presented in PDF format and consolidated financial statements to be done with XBRL or iXBRL. And the third option was to present Annual Report in PDF format and Annual report in XBRL or iXBRL format. Based on the results, the second option Annual Reports in PDF and consolidated financial statements in XBRL or iXBRL was chosen by ESMA. (Beerbaum & Piechocki, 2017; ESMA 2016.)

Based on the comments received and the cost-benefit analysis, ESMA focused on evaluating XBRL and iXBRL as the main alternatives to implement the structured electronic format. After further study, ESMA selected iXBRL which is based on XBRL but has few differences. (Di Fabio, Roncagliolo, Avallone & Ramassa 2019). The main difference between XBRL and iXBRL is that iXBRL is also human readable, as it can be easily opened with an internet browser. The benefits of iXBRL are also reflected in the ability to tag individual elements into an XHTML document. This in turn allows the desired information to be extracted from the financial statements material. (ESMA 2016.).

The Consultation Paper also gave an option to provide individual financial statements also in a structured electronic format, but it was not mandatory. In order to minimize costs and maximize benefits, the standard does not require the inclusion of all information in the annual financial statements in a structured electronic format. Therefore, the requirements were limited to those sections of the financial statements that were

considered as being the most important and useful for data analysis. The different phases of ESEF development is further illustrated in the Figure 3.

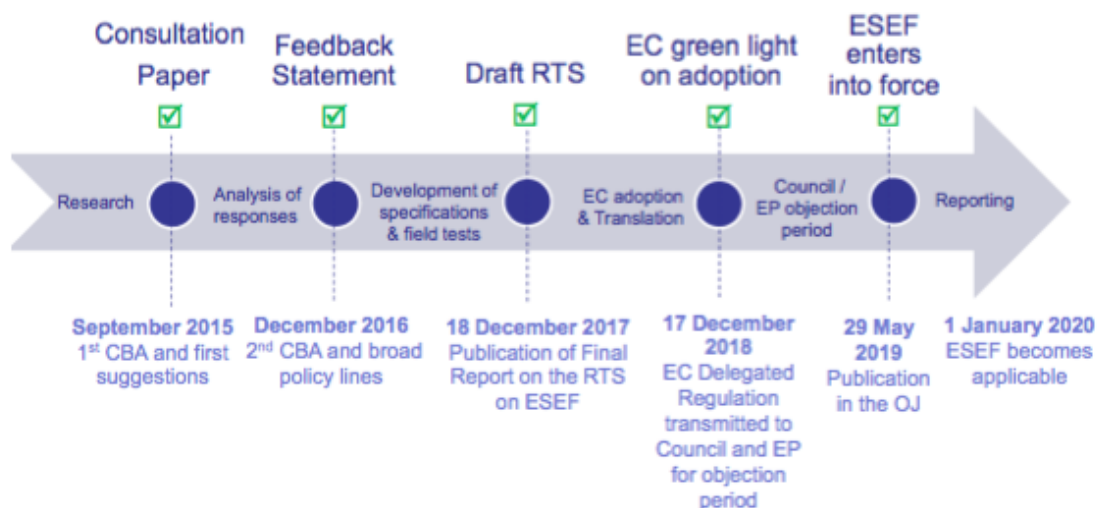


Figure 3. ESEF development (Sciortino, 2019).

2.3 eXtensible Business Reporting Language (XBRL)

2.3.1 XBRL as a basis

XBRL is a reporting language developed for electronic reporting purposes which is based on its character as an open international standard for business reporting. XBRL is XML based and it takes advantage of numerous XML related technologies such as, XML Schema, XLink, XPath and Namespaces. Besides being an open standard, XBRL is also freely available and market driven. XBRL is seen as a compelling driver in the accounting and finance development. The management of data flows can be seen improving as a result of the XBRL. It enables the data flow management by taking advantage of open source technologies by linking business information requirements and technical functions such as systems and platforms. (Ramin & Reiman 2013: pp. 360-364). The development and management of XBRL is under the responsibility of XBRL International which is a consortium consisting over 600 partner organizations within over 50 countries. The benefit of XML is that it can be associated with unique tags that allow computer

softwares to read individual information from the files containing financial or business information (XBRL, 2011).

XBRL has been around for a long time, up to twenty years, during which time it has been introduced in more than fifty countries. To date, however, the introduction of XBRL in several countries has been voluntary and has not been regulated. Despite this, for example in the US, China, and Japan, the introduction of XBRL is enshrined in national jurisdiction. On the other hand, in Europe the use of XBRL has so far been voluntary. However, this situation will change as the European Commission (EC) has identified the need for a uniform financial information reporting format, the use of which is provided for in the amended Transparency Directive (2013/50/EU). Publicly listed companies as an issuing companies and the EU Commission have had dissenting opinions does the structured electronic reporting really have the need and demand, and should it be implemented or not even though the use of XBRL has become very widespread among various organizations. XBRL has been utilized by regulators, individual companies, governments, data providers, investors, analysts and accountants. (XBRL, 2020; Singerova, 2015.) One of XBRL's main goal is to act as a reporting channel that companies are able to use for online corporate reporting to authorities without having to do any hands-on manual work (Singerova, 2015).

2.3.2 XBRL Taxonomy

The XBRL taxonomy can be thought as a hierarchical dictionary targeting specific reporting areas that themselves contain individual tags such as "net income", "net profit", etc. In its entirety, the XBRL architecture contains three basic elements, XBRL specifications, XBRL taxonomy and XBRL instance. The XBRL specifications define the guidelines in which the XBRL taxonomy should be prepared. The XBRL taxonomy, in turn, is a "tag library" that contains the taxonomy specific tags. The third element of XBRL, instance, is in itself an electronic report prepared according to the XBRL taxonomy and specifications which can be seen as an end product of XBRL. At a more detailed level, the structure of XBRL is illustrated in Figure 4. (Wang & Wang, 2018).

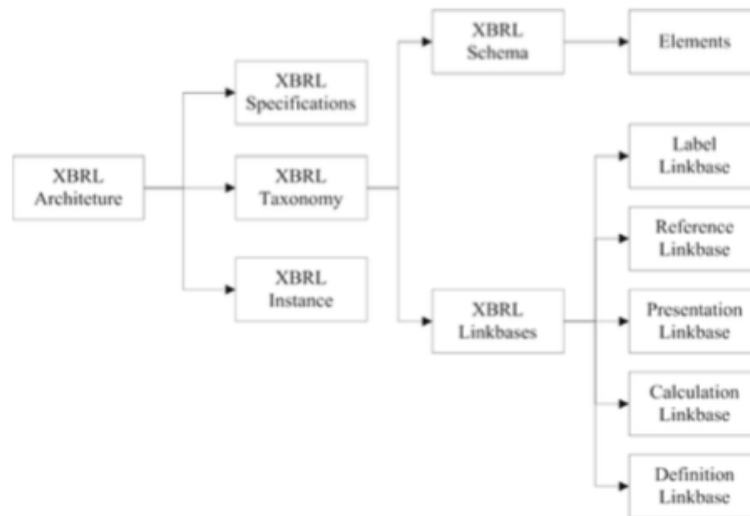


Figure 4. Architectural structure of XBRL (Wang & Wang, 2018).

There is not only one existing XBRL taxonomy. Multiple different taxonomies have been developed for different nations, industries and enterprises. Still, most of the taxonomies are reused or modified from already existing ones. (Wang & Wang, 2018.) The main high-level aspects of XBRL are defined and maintained by XBRL consortium. Nevertheless, in each country experienced accounting and information technology professionals oversee the development of nation specific XBRL taxonomies. However, in individual XBRL taxonomy development projects, extensive guidelines come from the XBRL consortium, which ensures the consistency of taxonomies from different countries. (Eierle etc. 2014). As a result of XBRL tagging, the file becomes readable for XBRL compatible softwares enabling information share between different organizations and companies. (Pinsker, 2003).

2.4 XBRL in Financial Reporting

Multiple research papers have been supporting the numerous different benefits of XBRL implementation in the financial reporting process. On high level, Ramin and Reiman (2013) recognized the following benefits arising from XBRL: Increased data quality; elimination of duplicated data; minimized amount of re-typed data; quicker processes;

streamlined reporting processes; automation of data handling; reduce in compliance, operating, reporting and auditing costs; single filing need; binding of disparate information systems; quicker data collection and analysis, improved competitive advantage and reduced risks because of improved integrity of data. In addition, Di Fabio, Roncagliolo, Avallone and Ramassa (2019) saw electronic and harmonized reporting format bringing numerous benefits for different stakeholders, such as reporting companies, investors and supervising authorities. These benefits included for example simplified reporting process, improved data availability and analysis capabilities, and comparability between publicly listed companies. However, in contrast, it is clear that XBRL incurs significant implementation and maintenance costs and quality errors, which contribute to doubts as to whether XBRL generates more costs than benefits (Ramin & Reiman, 2013; Di Fabio, Roncagliolo, Avallone, Ramassa, 2019).

2.4.1 Resource savings

Based on early studies XBRL was seen to have significant implications for financial reporting such as time and cost savings in preparing financial statements (Robb, Rohde & Green 2016). The use of XBRL in financial reporting was seen to improve access to financial information, investment decisions, and decision making (Doni & Inghirami 2010; Baldwin, Brown & Trinkle 2006). In addition, Wagenhofer (2003) identified XBRL as increasing the standardization of financial information, which contributes to the comparability and usability of financial reporting. Supporting findings about increased comparability in unlisted companies' financial statements was also recognized by Avallone, Ramassa and Roncagliolo (2016). These support Singerova's (2015) view of XBRL, recognizing that the XBRL will significantly change financial reporting, both externally and internally. Based on findings, significant benefits arise from information modeling ability and expression for the required semantic meaning in business reporting.

In addition, positive results on the benefits of XBRL in support of financial reporting were found in a study in North America, Germany, and South Africa by Pinsker and Li (2008) while they were examining the benefits and costs of the XBRL implementation.

Noticeable benefits were coming mainly from accounting cost savings and decreased data redundancy. In one of the case companies, the accounting savings arising from XBRL reporting enabled the accounting staff to be reduced by 30%. In this case, the company was able to transfer headcount from the accountant's role to the position of an analyst. This underscores the importance of automation in enabling the shift from accounting tasks to more and more decision making and business supporting roles. Another important finding from Pinsker and Li's (2008) study was found in one of their case company, where the consumed time for preparing financial statements reduced significantly. The time spent preparing the case company's financial statements was reduced from five to six days to only fifteen minutes. However, it should be noted that their research included a very small sample and such significant time savings were observed in only one case company. Thus, the finding should not be generalized, mainly this can be seen emphasizing the ultimate benefits arising from XBRL implementation.

2.4.2 Investor relations

Besides of lower accounting costs and data redundancy the findings from Pinsker and Li's (2008) considered also different approach to the benefits of XBRL in their study. One of interviewees in their study recognized the introduction of XBRL as positive contributor for the investor relations. This contributes to previous views that the introduction of XBRL would also support corporate investor relations. Nevertheless, previous studies have also revealed negative views of XBRL from an investor perspective as investors are seen to prefer an easy-to-read PDF format (AIC 2015; Deutsches Aktieninstitut, 2015).

In the light of the above, it can be concluded that the benefit to investors from XBRL is still somewhat unclear. More specifically, the effects of tagging narrative information in Annual Financial Reports affecting investor decision-making in SEC-affiliated companies in the U.S. was examined by Arnold, Bedard, Phillips, and Sutton (2012). In their study they focused on how the Management's Discussion and Analysis (further, MD&A) sections in Annual Financial Reports are or how they could be tagged. Already from previous studies they found the importance of narrative information reported in annual financial

reports to investors, and the ineffectiveness of XBRL in tagging this information. The ineffective tagging on MD&A was mainly due to the lack of standardized tags for narrative information which led companies to create their own tags. As the increasing amount of taxonomy extensions are created, the more comparability suffers. (see Hodge & Pronk 2004; Boritz and No, 2008).

To complement previous research, Arnold et al., (2011) compared the traditional and tagged MD&A presentation in their case company. The used tagging was based on the Enhanced Business Reporting Consortium (further, EBRC) framework, due to the inadequacy of XBRL. EBRC is a market-driven collaborative initiative which maintains MD&A taxonomy in order to improve transparency of the presentation of non-financial performance measures and qualitative information. This taxonomy is used to enable companies to fully tag their MD&A sections in their annual financial reports. (AICPA, 2020) The advantage of the EBRC framework is that it includes tags also for narrative sections, which is also the final aspire for XBRL. The results of the study were seen to ensure that the tagged presentation enable more effective inclusion of risk-related information into investors' decision-making. They also identified the need for further research on the topic as well as for the extension of the XBRL taxonomy. However, it should be considered that at the time of this study SEC did not require narrative sections to be tagged due to deficient XBRL taxonomy, still there were companies tagging narrative sections.

Besides of tagging narrative information, analysts as well as investors can benefit from XBRL in several different forms. XBRL significantly improves data transparency, clarity and consistency in annual financial reports. Comparing the annual financial reports of different companies becomes easier because of the consistency. XBRL also contributes as a factor improving the tools which analysts and investors are using while investigating company information. With the new XBRL tools, analysis, comparison and benchmarking can improve significantly. Also, because of the detailed tagging of accounting information, analysts can drill down in more detail level into a company's financial information. (Ramin & Reimin, 2013).

2.4.3 Data reusability

Overall, Eierle et al. (2014) saw the real value of XBRL laying in its reusability, which enables the utilization of reported data among business partners throughout the reporting supply chain. Both, Esser (2012) and Willis (2013) cited as examples the advanced lending process by banks, where the time required for loan decisions could be reduced from weeks to a few days using XBRL. In addition, XBRL was seen to bring significant time-saving benefits to the analysts as well (Newman, Ritz & Vridhachalam., 2008). Overall, XBRL was seen to improve the ability of analysts and investors to conduct increasingly comprehensive and comparable analyzes of the financial situation of companies. Besides this, XBRL is also seen as streamlining auditing processes (Shan & Troshani, 2013). Thus, XBRL is seen to deliver benefit for a wide range of stakeholders, from investors to authorities (See. Figure 5.).

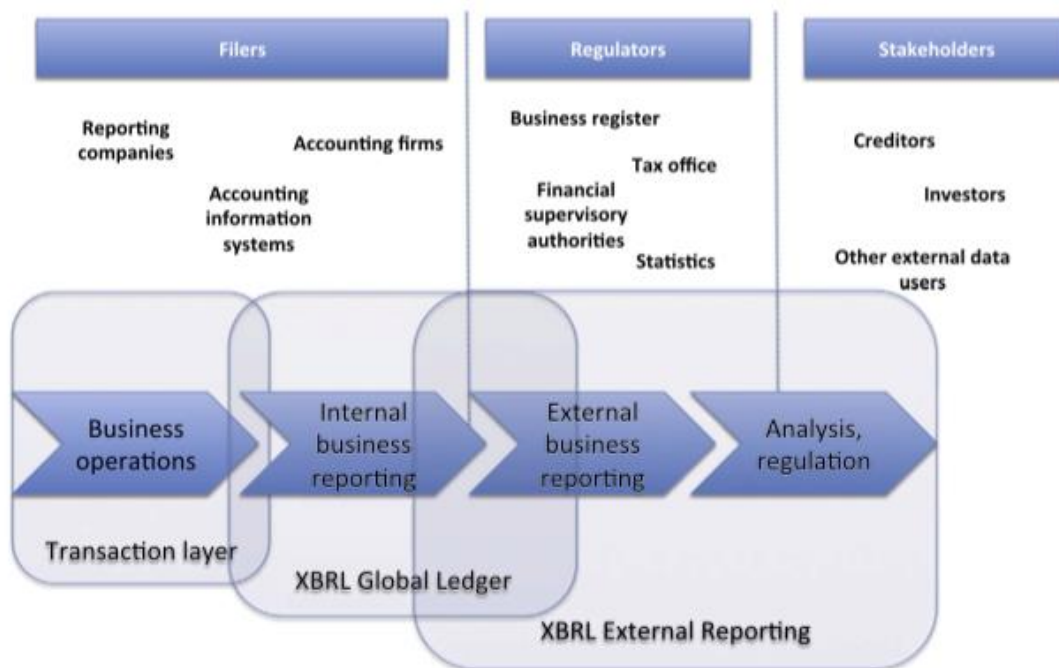


Figure 5. XBRL supply chain (Eierle et al, (2014)).

2.4.4 Data quality and errors in XBRL filings

As XBRL has not yet been fully implemented in Europe, this study reviews also the problems and errors that have emerged in SEC filings. The SEC published the XBRL Reporting Mandate in 2009 and tens of thousands of filings have been reported under it since then. Already by August 2013, a total of more than 1.4 million errors had been detected in the filings, reflecting XBRL's error sensitivity. Due to error sensitivity, some companies have even been found to shy away from financial reports created with XBRL and the continuous criticism still occurs towards XBRL reporting. (Brands 2013a; Brands 2013b.)

At the beginning of the SEC's mandate, the U.S. GAAP taxonomy contained approximately 15,000 accounting elements, leading to a situation where numerous necessary accounting elements used in financial reporting were not found from the taxonomy. The lack of taxonomy led companies to start making taxonomy extensions as the companies could not find a suitable tag. As blatant examples, Brands (2013a) described a large pizza chain where up to 80% of the reporting elements were made as an extensions because the company wasn't aware of that they could change the description of the existing element. Lessons were learnt and after the expansion of the taxonomy, the number of extensions has decreased and the number of elements of the taxonomy has increased. Issuing companies have also increased their expertise in XBRL, which has contributed to improving the quality of XBRL filings. (Brands 2013a).

Despite the expansion of the taxonomy, XBRL filings are still error prone. XBRL US identified the following types of errors in SEC XBRL filings: reporting false negative value for an account expected to be positive (29% of all errors), assigning false accounting element which is not fitting in to the accounting hierarchy (29% of all errors), incorrect calculation weights (5% of all errors), missing calculations (3% of all errors), values which should be nol or completely empty (3% of all errors) and totally non sense values due to unreasonably high or low values (3% of all errors). (Brands 2013a.).

The high number of errors is, of course, a large challenge and the risk for issuing companies as the tagged data is available for investors and analysts through the SEC EDGAR data base. In this case, the company's financial statements can be analyzed more and more accurately with XBRL analyzing tools and as a result of this, analysts and investors are able to notice errors in financial statements easier. An example of this is the case where an analyst examined the filings of a company and found an error which he later reported to the company's General Counsel and the SEC. A situation like this is a real risk for a company that emphasizes the validation and review of reports produced with XBRL. (Brands, 2013a).

Brands' (2013a; 2013b) findings are also strongly supported by Harris and Morsfield's (2012) key findings in an XBRL focused study in which they interviewed investors and analysts. Based on the interviews, there was significant dissatisfaction with the number of errors in the tags and the large number of tax extensions. Also, the poor accuracy of the data was emphasized, which in turn may be due to tagging extensions. In addition to these, investors and analysts were worried about the lack of audit scope for the XBRL data and the lack of necessary tools for analyzing XBRL data compatible with the company's workflow.

For risk management, Brands (2013a) recommends that companies implement XBRL filing to include the company's internal controls, policies and regular procedures. The XBRL software should also include validation options. In addition, companies should develop an internal control process for reviewing and sign offing the correctness of filings while also asking the auditing company to review the data created with XBRL. In support of this, based on their research focusing on XBRL, Harris and Morsfield (2012) recommended that filers should focus more and more resources on improving the quality as well as usability of filings. In addition, they emphasized the importance of the XBRL community in reducing errors and suggested closer regulatory oversight and the inclusion of XBRL data under the auditing scope.

2.5 XBRL implementation

2.5.1 Approaches to XBRL implementation

As with many finance management services, also XBRL adoption can be implemented either internally or by outsourcing. These two differ significantly in terms of required resources. When outsourcing the service, a company does not have to recruit or train its own employees especially for XBRL, nor have to invest to a new information system. However, in the case of XBRL implementation, by outsourcing one key regulatory financial reporting process to a third party might pose certain risks for companies. In this case, issuing companies should consider which option is most suitable for their own situation. Besides choosing from outsource or in-house process, the company must choose the technical perspective whether they want a simplified bolt-on system, integrated built-in system or deeply embedded system. (see. Eierle et al., 2014; Henderson, Sheetz & Trinkle., 2012; Garbellotto 2009a; Garbellotto 2009b).

These three technical implementations have multiple differentiations, both in terms of required resources and functionalities. In the bolt-on approach, a company obtains a separate XBRL mapping tool into which data is imported, most often from traditional Excel-file, where the company's financial statements are preliminarily prepared. After that, the tagging required sections are separated from the Excel file and imported into the XBRL tool for tagging. After tagging the required items and financial statements, the XBRL report is virtually ready for generation. (Garbellotto, 2009a).

As a slightly more challenging technical alternative than the bolt-on approach, there is an integrated built-in option. In this option, XBRL is closely integrated into the company's financial reporting process and accounting information systems. One of the prerequisites for a built-in approach is an XBRL-compliant consolidation or reporting system, however, the absence of such compatible systems does not completely preclude the introduction of a built-in approach. In the absence of a compatible system, the company has to take advantage of XBRL Global Ledger as well as separate XBRL mapping software while using

open source components. The advantages of integrated built-in system are that it can eliminate a completely separate XBRL plug-in workflow that comes in a bolt-on approach to data import as well as a separate tagging phase. In the built-in solution, XBRL Global Ledger enables the utilization of any information about the company's chart of accounts as well as journal entries. In this case, the built-in approach allows the company to make more extensive use of XBRL also in internal processes, not only in terms of external regulatory reporting. (Garbellotto, 2009b). Third option, the deeply embedded approach relies fully to XBRL Global Ledger taxonomy in the data standardization (Garbellotto, 2009a). These three options will be examined thoroughly further in the study.

Companies have to choose between these three technical solutions. Each of the options include their own pros and cons. Bolt-on solution is relatively cheap, as the basic tools cost around \$ 1,000. In this option, however, it should be noted that the bolt on approach requires staff to be trained in the technical as well as taxonomic aspects of the system. In addition, in connection with each financial statement, the financial statements must be prepared separately in the XBRL software in connection with mapping and XBRL conversion. On the other hand, for the bolt-on approach, the SEC conducted a cost analysis. Based on a cost analysis, the direct cost of the first submission produced with XBRL was approximately \$ 31,000. However, the cost dropped significantly as early as the next submission, at which point the direct cost was seen to be around \$ 9,000. When examining costs, it should be noted that the SEC examined costs in companies operating in XBRL ancillary businesses. The decrease in costs was seen to be due to an increase in staff capacity, which reflects the importance of the learning curve. Variable costs were not taken into account in these cost calculations.

2.5.2 Bolt-on approach

In the Bolt-on approach, the files used in XBRL tagging are first prepared in separate desktop versions, most often using traditional Word or Excel file formats. In this case, the preparation of the base files for the company reporting process remains completely

similar. After the files are prepared, they are transferred to the XBRL mapping tool, which allows XBRL tagging to be made. (Garbellotto, 2009a).

As mentioned in the previous section, the bolt-on approach is very affordable in terms of direct cost, with its cost hovering around \$ 1,000, compared to the built-in or deep embedded version. Nevertheless, if a service is not outsourced, its learning requires resources, creating costs. The advantages of the bolt-on approach are its ease of use and relatively fast implementation. Limitations, in turn, are the limited functionalities of the bolt-on approach. For example, it cannot be used in non-regulatory reporting, thus losing the opportunity to use the software in internal reporting as. Also, change management and adjustments to the changing reporting requirements is considerably difficult with the bolt-on approach as the changes has to be done in two different places, in the initial document creation and in the mapping from the report to the XBRL taxonomy. Therefore, the continuous development in the reporting standards pose significant threat for the efficiency of the bolt-on approach. Indeed, Garbellotto (2009a) sees the Bolt-on approach suitable for companies seeking to rapidly comply with XBRL-related regulatory regulations. However, in the long run, the implementation of a built-in system is highly recommended.

2.5.3 Built-in approach

The built-in system is highly complex compared to bolt-on approach and therefore it requires significantly larger resources for the implementation process. However, the built-in system achieves greater benefits. Garbellotto (2009b) identified three different benefit categories: assembly and review of end reports, change management in compliance requirements, and easier transition to a deeply embedded approach.

The built-in approach enables collaborative and contextual review of the produced reports as well as more efficient and automated combination of reports. In addition, with the built-in approach, reporting can be implemented as a single process, without the need of combining different processes, such as the preparation of financial statements

in excel files and afterwards importing them in to the XBRL mapping software. Besides these, if there is a change in accounting standards, the modifications needs to be done only to one location in the reporting process. In this way, the need for change can be minimized, which contributes to reducing the possibility of human error. The built-in approach implemented by XBRL General Ledger, by its very nature, allows a remarkably wide access to the company's various accounting items, which means that its possibilities of use are also considerably wider than in the bolt-on approach. Indeed, the greatest benefits of the built-in approach are seen in the possibilities laying in internal reporting. (Garbellotto 2009b.)

2.5.4 The deeply embedded approach

The deeply embedded approach utilizes XBRL Global Ledger taxonomy to standardize accounting data. XBRL Global Ledger data standardization allow end reports and regulatory filings to be made directly without additional processes, as in the deeply embedded approach the whole process is already standardized from the initial data source. This eliminates the need for separate data collection as well as different phases in the reporting process. Deeply embedded approach enables the harnessing of XBRL benefits to automate manual, laborious, and error-prone processes. This streamlines business processes, both in terms of cost savings and freed up resources. In this approach, the goal is to reap the benefits of XBRL by embedding it as widely as possible in information systems all the way from the trial balance level to the individual documents and transactions. This enable significant cost savings as well as cost efficiency. However, the intention of deeply embedded approach is not to replace existing accounting information system infrastructures. (Garbellotto, 2009c).

The deeply embedded approach of XBRL is intended primarily for in-house information processing and analysis, rather than for regulatory external reporting. Thus, it allows XBRL to be utilized much more extensively than required in regulative manners. Therefore, the deeply embedded approach cannot be directly compared to the bolt-on nor

the built-in approach. In addition, the costs are on a completely different scale in this option than those mentioned earlier due to the extent as well as the depth of integration.

There is no comprehensive information on the implementations of the deeply embedded approach, but Garbellotto (2009c) describes it as an enabler for the elimination of one-way interfaces between systems and data reconciliations and seamless audit trails. Also, the usability of templates used for visualization, data validation and analysis within different applications and business units are extended. The deeply embedded approach is intended to be integrated to the existing accounting information systems, enabling automation of manual work steps. As the implementation of deeply embedded approach requires significant resources and planning, it is also possible to execute the implementation gradually process by process.

2.5.5 Comparison of the approaches

Thus, the three approaches differ significantly from each other. From these, the bolt-on approach is by far the simplest and fastest to implement, operating mainly for external reporting only. The built-in approach, in turn, is more complex and requires more resources for implementation. However, the built-in approach allows for a wider use of XBRL in internal reporting as well. From these three, the deeply embedded approach is the most planning and resource demanding approach to XBRL. In this case, the XBRL General Ledger is embedded deep into the company's information systems, enabling large-scale automation of manual processes as well as internal data processing. Companies must choose from these three options the most suitable for them. However, in the long term, the deeper the XBRL can be embedded in enterprise information systems, the more it will benefit the company.

2.6 Implementation phases

For companies, it is necessary to fully understand the XBRL and its aspects while considering the best solution for company itself. Janvrin and No (2012) proposed a four-step

chain of events as an approach to the implementation of XBRL for individual companies (See. Figure 6.). The first phase included the plan for the implementation, the second phase included tagging the financial items as well as creating the taxonomy extensions. Third phase included validating, reviewing and rendering the XBRL documents while the fourth phase was further auditing and issuing the XBRL documents.

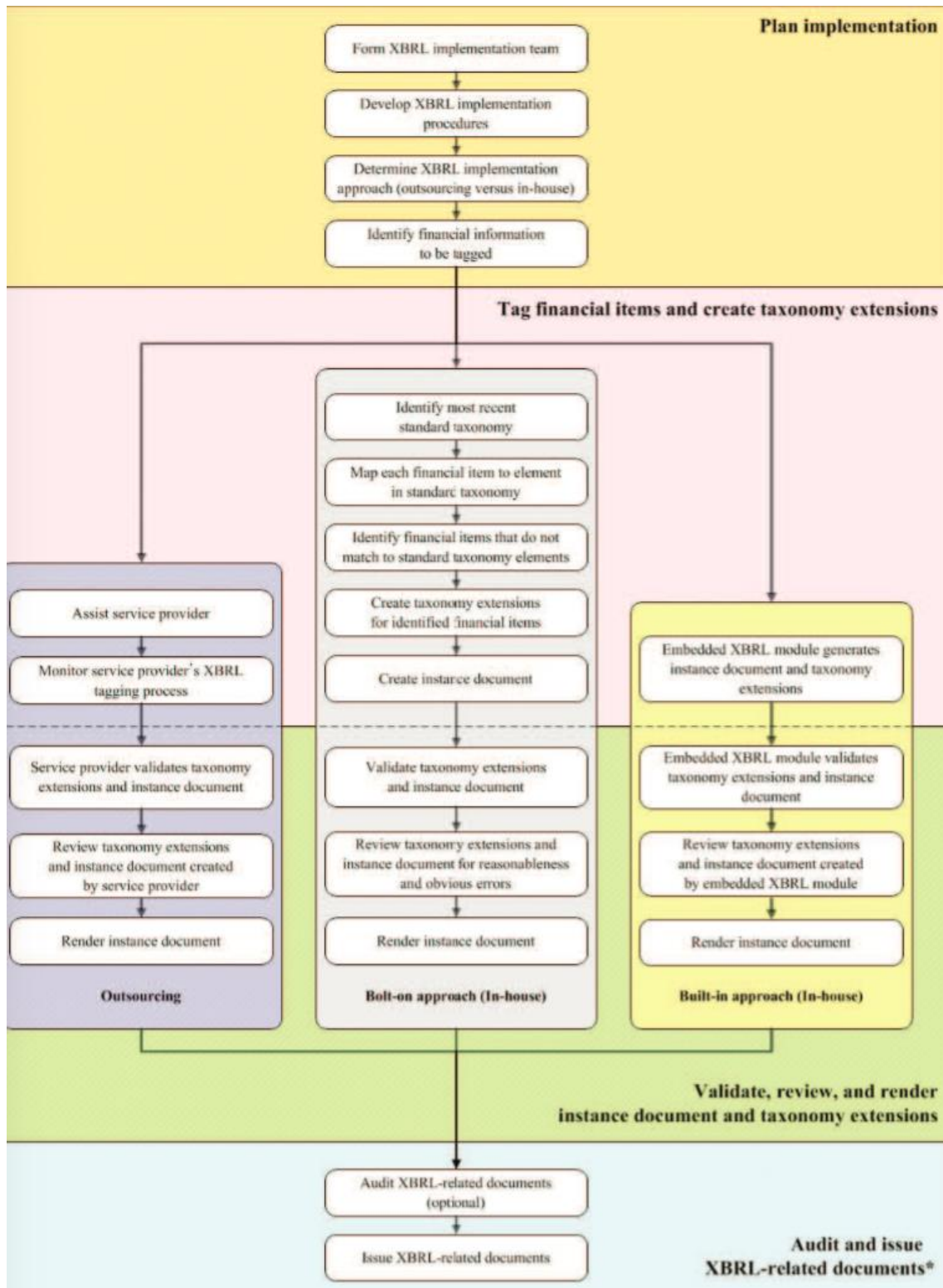


Figure 6. XBRL implementation process flow (Janvrin & No, 2012).

In the first phase, the company seeks to gather as much information as possible regarding XBRL and its related regulatory factors. In addition to this, for the implementation of XBRL, a clear plan for the process and responsibilities such as RACI (Responsibility assignment matrix) has to be prepared and the project team has to be set up to work on this. In the planning phase, decisions about how the whole implementation will be prosecuted from technical and resource-based point of views are considered. At this stage, the various approaches such as bolt-on, built-in and deeply embedded approaches to the XBRL implementation are discussed, as well as whether the XBRL will be set up internally or by outsourcing to third party. In addition to this, the project staff or responsible persons should be trained to produce as well as tag the XBRL documents as required in the desired manner. Also, to ensure the quality of the XBRL end products, a review process must be placed.

The decisions made in the planning phase determines how to proceed in the next two phases which are related to the creation process of taxonomy extensions, tagging financial items and validating, reviewing and rendering the XBRL documents. The approaches to the second and third phase depend significantly on whether the company choose to implement XBRL as an in-house or by outsourcing. If the XBRL implementation is done as an in-house project the implementing companies has to choose the most suitable solution for their situation from three before mentioned different technical approaches, bolt-on, built-in or deeply embedded approach. On the other hand, company can choose to outsource the tagging and creating taxonomy extensions to a third-party service provider. Even with this approach, the implementing company is still responsible for reviewing the tags and extensions made by external service provider as the final liability of errors rests on the issuing company's shoulders. (Janvrin & No 2012; SEC 2009; XBRL US 2008).

The second phase includes tagging the financial items as well as creating taxonomy extensions. Process starts by choosing the most suitable standard taxonomy for the company and by mapping financial items to the initial tags included in the chosen taxonomy.

Although, if an appropriate tag cannot be found from the taxonomy, then the issuing company has to create one by itself by creating taxonomy extension which is anchored to the closest existing accounting item. As a last step after tagging the financial items the XBRL document is ready to be created. If this phase is processed by external service providers, the issuing company needs to support the service provider in creating taxonomy extensions and tagging.

The third phase; validating, reviewing and rendering involves validation tests which are intended to ensure that XBRL ancillary documents complies with the XBRL specifications as well as regulatory requirements. In field study, Janvrin and No (2012) suggested that while reviewing the XBRL documents for errors companies can take advantage of rendering software in order to ensure the inspected financial figures are reflecting to company's financial statements. As in the previous stage, the issuing company is also responsible for reviewing the prepared XBRL documents, even if an external service provider is used (Fox 2009).

The last fourth phase includes auditing and issuing the XBRL associated documents. In this phase the issuing company may ask their audit firm to validate the XBRL documents and compare them with the initial financial statements in order to verify correctness (Boritz & No 2008; Farewell and Pinsker 2005; McGuire et al. 2006; Plumlee and Plumlee 2008; Srivastava and Kogan 2010). After all these previous steps, the process comes to its end and the company can publish their XBRL -related documents for the authorities and stakeholders.

In addition, Boritz and No (2016) described a very similar process as Janvrin and No (2012) for the implementation of XBRL where they described Mapping, Extending, Tagging and Reviewing as the four main steps in the implementation process (See. Figure 7.).

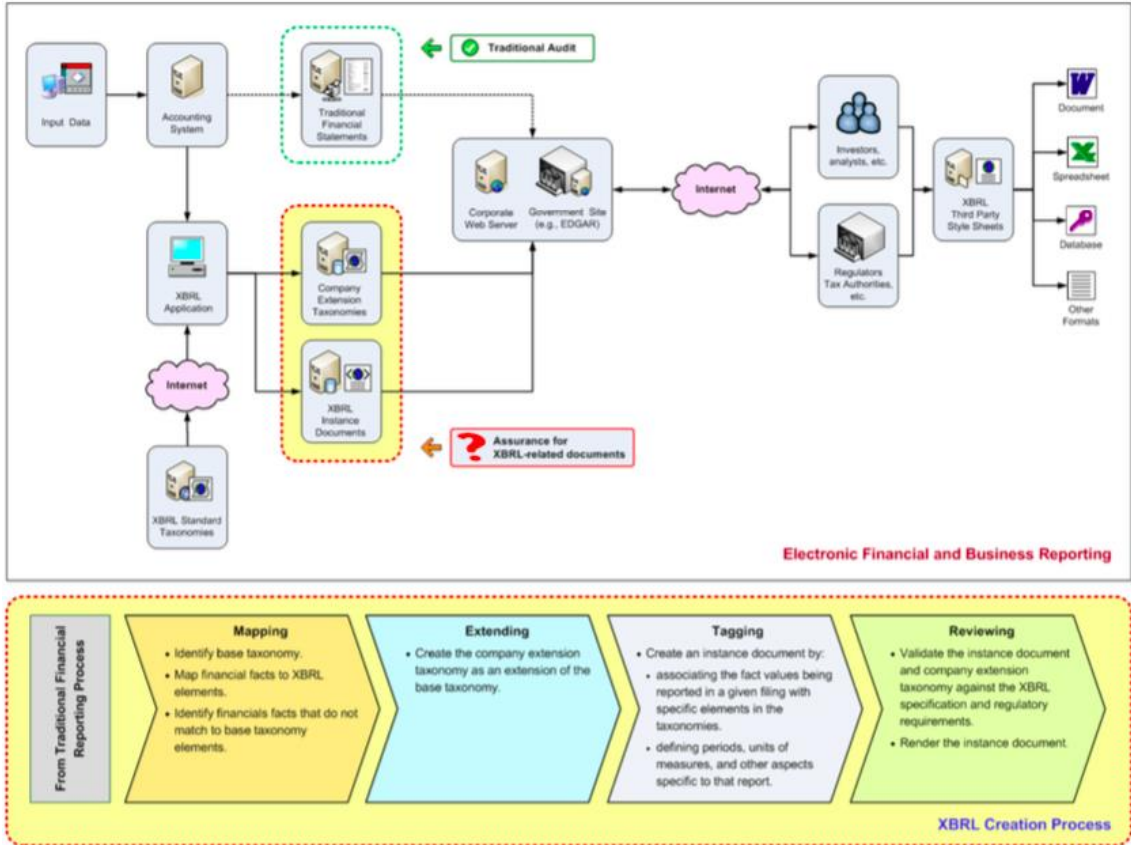


Figure 7. XBRL Process Flow example from US (Boritz & No, 2016).

3 Empirical research

3.1 Research methodology

3.1.1 Research method

This study was conducted in connection with ongoing implementation project of XBRL and disclosure management system in Company XXXX. Due to the active participative role of the researcher and the employee-researcher relationship, the study was conducted as an interventionist action research within the ongoing project. The aim of the project is to develop and implement a new external reporting process for Company XXXX that enables ESEF reporting while also seeking for alternative ways to take advantage of the implemented disclosure management system. The researcher of the study is closely involved in the implementation project, acting as an active member of the project team. The Company XXXX also acts as the researcher's employer. Researcher has been an employee of Company XXXX for approximately 1.5 years, working in the Financial reporting team. The author of the research thus acts as a researcher in the company, generating added value to the project also with wide knowledge about the context of the project. Within the company, the Financial reporting team, the Finance Development team and the Investor Relations team are closely involved in the project. The company is also supported by an external financial management consulting company, which also acts as an indirect service provider for the new information system used in the reporting process.

The research material consists of the researcher's participatory observation, internal documentation, formal and informal discussions and meeting minutes. Participatory observation focuses on the active promotion and monitoring of the project. The researcher's observation is based on active participation in the project, as well as on-going formal and informal discussions. During the research process, the researcher has been in constant interaction with other project staff and key finance personnel, which is why the content and the results of the research reflect the perceptions of entire project group

to a significant extent. Therefore, the content and results are not only relying on researchers' perceptions.

Observation as a research method can be used either independently or in support of other research methods and it is divided into two different subcategories, participatory observation and non-participatory observation. With the help of observation, it is possible to obtain information about the activities and behavior of different individuals, groups and organizations. Observation has been found to be a suitable research method specifically in qualitative studies, which this research also is. Observation as a research method has also faced criticism. Criticism has been closely related to the role of the researcher and the fact that the researcher's presence can affect the research environment. In addition, there are situations where it is not possible for the researcher to write down all the material, but to have a reliable record, and to record notes of the situation or event only afterwards. (Hirsjärvi, Remes & Sajavaara. 2004, pp. 201-204). However, the role of the researcher in this study has not caused a change in the research environment, as the researcher has been working in the research environment for more than 1.5 years, thus being a normal member of the company and project team, just as other project members. On the other hand, this study has identified Hirsjärvi et al. (2004, pp. 201-204) findings, in which the researcher has not always been able to immediately record important information for the research, but the researcher has relied on the memory and recorded things afterwards.

Company XXXX's internal documentation, in turn, is collected from notes made at different stages of the project, meeting minutes and various project-related instructions, presentation materials and request for proposal materials. The internal documentation also includes documentation provided by the service provider, which focuses on ESEF and the used disclosure management system. Utilizing the above research methods, the aim is to gather the widest possible understanding of the project under study and its most significant factors. The selected data collection methods ensure the optimal

amount of information based on which it is possible to answer research questions and draw conclusions.

3.1.2 Action research

Action research is one of the sub-styles of case/field research first introduced by Kurt Lewin in the 1940s. Historically, action research has not been used extensively in accounting related academic researches. The research method has been characterized as experimental, based on the idea that complex social structures and processes can be studied most effectively by influencing them, while also analyzing the consequences of the effects. (Lukka, 1999). The base idea in action research is to solve and develop practical problem in a real environment (Heikkinen, Rovio & Kiilakoski 2006). According to Heikkinen (2006), the following subjects are strongly related to the action research: pragmatism, participation, intervention, reflectivity and the social process. These factors become well apparent in this study as well.

In action research, the researcher mostly have two roles. The purpose of the researcher is to participate actively and closely in research-related development work, while also producing theory related to the topic. In this case, the researcher can be seen to have the role of researcher and theoretical developer. The researcher participates for example to the implementation or development of a new system or management method in the case company while also acting as a researcher, collecting academic material of the research subject. Active participation can include, for example, observation, interviews, analysis of archival material, and participation in meetings and daily informal discussions. In action research, it is important to establish a close relationship with the different stakeholders whom are related to the research subject. One of the goals in a close relationship is to promote and support the learning process of stakeholders. (Lukka, 1999).

From the above description of Lukka's (1999) action research, many factors closely related to action research defined by Heikkinen (2006), can be identified. In action research, it is important to reflect theory into practice, which emphasizes pragmatism in

the research (Heikkinen, 2006). A participatory and interventionist perspective, in turn, emerges through the active participation of the researcher. In action research, the interventionist role of the researcher becomes important, which can be used, for example, to detect unrecognized behaviors and behavioral patterns. Reflectivity, in turn, arises in part in the same way as proximity to practice, with the researcher reflecting on practice in theory. The researcher's own reflection also plays a significant role in reflectivity, which helps to explore the way of thinking as well as course of actions. Heikkinen (2006) also described the social process as one of the factors in action research. The social process manifests itself well because of the community atmosphere of action research. The research is carried out in a group that includes members such as researchers, colleagues, supervisors, peer groups and other stakeholders.

3.1.3 Data collection

The most common data collection methods in interventionist case studies include interviews and participant observation. In general, in management accounting research, the researcher engages with the company or organization involved in the research by connecting with their work and experiences through active interaction. (Järvenpää & Pellinen, 2005). On a detailed level, the researcher's observation around the ongoing project, company's internal documentation, discussions and thematic interviews have seen as a sufficient data collection method in interventionist case studies (Hirsjärvi etc. 2004 pp.201-204). In this study, the researcher chose to use researcher's participatory observation, formal and informal discussions with project members and key finance personnel, project related documentation and meeting minutes as main data collection methods.

3.1.4 Data analysis

Due to the qualitative nature of the research, the lack of statistical reasoning has been replaced with theoretical and practical relevance, depth of analysis, interpretation and combination of used data collection methods (see. Yin, 1984). The research material is

strongly based on the researcher's participatory observation, project documentation and formal and informal discussions within the Company XXXX. This causes the lack of clear structure in the research material and thus simple quantitative analysis methods can't be applied in this research. With the help of various research materials, the researcher can strengthen the observations, interpretation and the limits of interpretation (Vilkka, 2006). The data of this research have been analyzed by combining information collected from different sources and drawing conclusions from them. The dialogue thematization has been utilized in the data analysis, in which theoretical thinking, empirical material and previous theory of the topic are placed in dialogue with each other when making analyzes and conclusions. (Puusa & Juuti, 2011).

4 Results from empirical research

4.1 Company presentation

Company XXXX is a Finnish publicly listed technology group that is one of the world's largest companies providing services and products in its field. Therefore, the Company XXXX is a global leader in its industry. Company XXXX has significant experience in the field of production technology, with a history of more than 100 years. Over time, the group has changed its structure numerous times as a result of various acquisitions and divestments, which eventually has enabled the company to focus on its core business. (Company XXXX, 2019a.)

Company XXXX is a relatively large company with a turnover of multiple billions in 2019, and also in terms of market value, the company is among the 100 largest publicly listed companies within the Europe. Furthermore, the company operates in more than 60 countries around the world with tens of thousands of employees in 2019. Business operations focus on two separate business areas, service business and new equipment business. (Company XXXX, 2019b.)

4.2 Case project

4.2.1 Project introduction

The project related to ESEF and XBRL was launched in the company in the year of 2019. At that time, the key personnel of the project became acquainted with XBRL and ESEF and the changes they are causing for the preparation and publish process of the annual financial statement in publicly listed companies within the EU. Quite quickly at the beginning of the project, the company defined the project objectives, schedule, different approaches to project implementation, and software requirements. For the implementation scope, two different approaches were outlined in the Company XXXX. In the first option, the XBRL implementation is performed on a large scale in the Company XXXX, including in addition to the mandatory ESEF tagging, the automated data flow between

the reports and the implemented disclosure management system, partially automated commentary of illustrative text sections in interim and annual disclosures and automation of Board of Directors report, result presentation and Audit committee materials and the complete preparation of the outlook and content of published interim and annual review reports in the website and national database (for ESEF). The second option in the Company XXXX was to execute the implementation as simple as possible, with only ESEF-compliant tagging. In this case, the Company XXXX's external reporting process remains very similar, and no automation is done to the process itself. In this approach, the company performs the ESEF tagging directly on the completed annual disclosure, without changing the preparation process itself. In this case, the tagging can be done either in-house or by outsourcing the process because of its nature as straight forward "Bolt-on" tagging procedure.

The above approaches differ significantly in terms of implementation scope and required resources and costs. After internal consideration by the company and a competitive bidding process, it was found that the first introduced, i.e. wider scope, implementation was the most suitable for Company XXXX, although its implementation requires considerably more resources than the implementation of the second and more simplified option. The term "project" used in this thesis further refers to a selected large-scale implementation project.

For the implementation of the project, an external service provider's service entity will be used in the Company XXXX. The service entity had to include system, system support, XBRL consulting support and project management on the service provider's side. Within Company XXXX, a separate Project Manager from Finance Development team and responsible key finance personnel from the project teams, in this case the Investor relations and Financial reporting teams, were agreed to participate in the project. In addition to these, the project also involves other key personnel from the Company XXXX which are closely involved in the external financial reporting process.

In the second half of 2019, a tendering phase was launched in Company XXXX, where the Request for Proposals were sent to four different service providers. In short, the request for Proposal inquired the basic information from the service providers participating in the tender. Basic information included a brief introduction of the service and system that they are offering, a proposal on how the implementation should be conducted, schedule for the project and participating project organization. In addition to this, the potential service providers were asked what sort of challenges the implementation process may face as well as the experiences from previous customers. The Request for Proposals also included an inquiry into project cost split and the aspects regarding information security. Based on the submitted Request for Proposals and reference calls, a Finnish service provider was selected for the Company XXXX, which utilizes third-party SaaS system in their service catalog or entity. More specifically, Company XXXX decided to choose Company Y as a service provider because of the following factors: Company Y is a local consulting company which in turn will ease the implementation process as support can be also used on premises, reference call with the organization using Company Y solution was positive and technical system support was located in Europe. In addition to this, the positive feedback from the demo was received as the solution was easy to use and relatively easy to implement.

After the tendering phase, a preliminary timetable was defined for the various phases of the project as well as for the final completion of the project. According to the preliminary schedule, the actual implementation phase of the project was scheduled to start in late 2019 in October. At this stage of the project, the purpose was to define data sources, data and workflow, key users and the draft structure of the report used in the chosen system. After this, the next step is to test the system structure and develop it. At this point, the system is installed for the users, the system IDs and roles are created and the actual internal workflow within the system is created into which the users are connected. In addition, data sources and data bridges from the source to the system are created, and separate internal system reports, Excel and Word files, as well as separate implementation-related parameters and variables are developed. In the third phase, there is

a “Go-Live” where the system is used to create the final product, in this case the Q1/2020 Interim report, which, however, does not yet include the XBRL taggings itself, as it only enters the project for the annual financial review. In the fourth stage, the project is declared complete when all the different objectives and stages of the project have been completed and achieved. The fourth phase of the project will take place when the company has created the Annual Financial Review and the associated XBRL tags, which will eventually take place in the beginning of 2021 or late 2020 before publishing an annual financial review in 2021. See the illustrative figure of the phases below (Figure 8.).



Figure 8. Project phases (Service provider, 2019a).

4.2.2 Project targets

The objectives of the project are divided in this research into primary and secondary objectives. The primary goal of the project is to implement a system in the Company XXXX, which will enable the company to meet the ESEF requirements and delivery of the Annual Financial Review. For this purpose, the company organized a tendering phase for different service providers, based on which the most suitable service provider for the company was selected. The role of the service provider is to provide Company XXXX with a suitable system that enable the preparation of an Annual Financial Review in

accordance with ESEF. In addition, the service provider acts as a close technical and expert support in the implementation process and other possible system technical issues. The secondary goal of the project is to automate the company's external reporting process also outside the requirements of the ESEF, as the system to be implemented will enable much wider functionalities in addition to ESEF-compliant tagging. In addition to the external reporting process and its automation, the Company XXXX has considered extending the project to partially automate internal reporting, but this part of the project has not yet been launched beyond the initial study. Due to the above factors, in addition to the primary objective, a clear secondary objective was defined for the project, although it is not directly but mainly indirectly ancillary to the ESEF.

The empirical part of the research deals with the different stages of the project and the implementation process in terms of both the primary and the secondary goal. The primary and secondary objectives of the project also interact very closely with the research questions in the research. Achieving the first goal and the description of its different stages are closely related to all research questions. The secondary objective, in turn, is strongly related to the second and third research questions, with a focus on system implementation and changes in the company's reporting process. Achieving the secondary goal is the most significant factor in the automation and development of Company XXXX's external financial reporting. The Figure 9. illustrates the different stages and sub-areas of the implementation process itself. Later in the empirical part, the implementation will be studied in more detail.

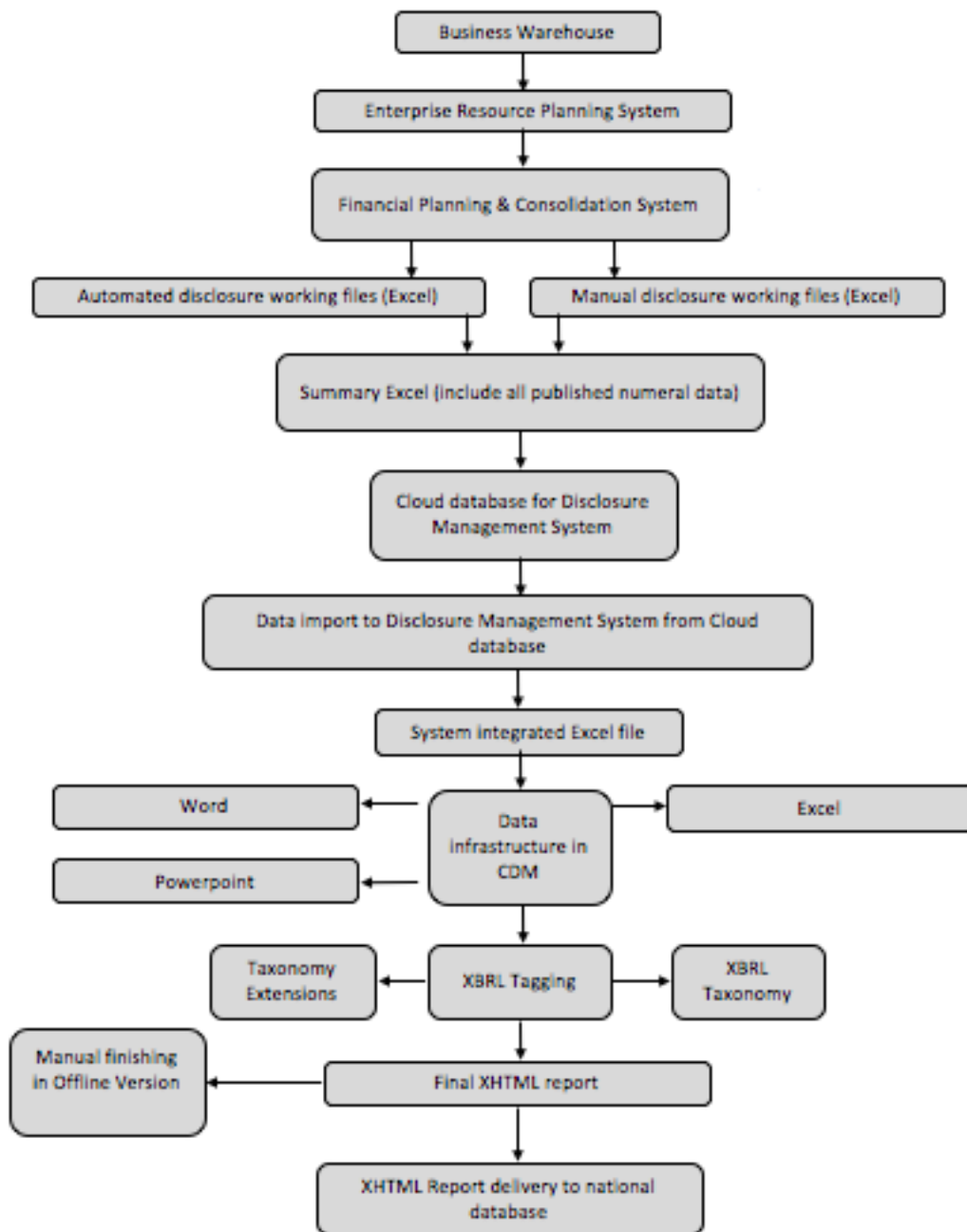


Figure 9. Annual Financial Review preparation process (Company XXXX: 2020c).

4.2.3 Disclosure Management System

Company XXXX is implementing a Software-as-a-Service disclosure management tool which is provided by a third party solution vendor. The implemented system is specially designed for XBRL as well as financial and regulatory reporting. US based technology company is responsible of development and management of the tool, which in turn in

Finland is provided by a consulting company focused on finance performance management consulting. The disclosure management system provider describes their system as a "unified financial governance solution that focuses on improving financial processes and controls, particularly in the final stages before disclosure." The system is especially designed to automate the data collection and validation process, while also offering possibility to create multiple different type of reports, such as management, performance and regulatory reports. System is also described to connect business intelligence and performance management, while combining them with the narrative analysis in controlled and auditable environment. Due to these factors, the system is seen to help finance departments to improve their financial management processes and reporting, both in terms of timeliness and quality. (System Vendor, 2018).

The system vendor describes SaaS system enabling multiple advantages such as, simple and fast implementation process with minimal efforts needed from the implementing party, built-in audit trails, easily integrated to different data sources on both on premise and in the cloud and advanced information security management system. In addition to these, SaaS infrastructure enables high capacity with flexibility and scalability as platform can be adapted to increasing number of users. (System Vendor, 2018). The Finnish service provider of the system used by Company XXXX promotes the automation of standard reports as the core functions of the system, which include, among other things, interim reports, the annual report and monthly reports. Thus, in addition to the ESEF related XBRL tagging, the system also enables the automation of financial reporting processes. Therefore, this system enables Company XXXX to achieve the primary as well as the secondary goal for the project. (Service Provider, 2019b).

Company XXXX also performed a SWOT analysis of alternative solutions. Based on the SWOT analysis, the strengths of the implemented SaaS system was a quick and easy implementation process, MS Office compatibility, and being ranked as number one in XBRL data quality among software vendors. The possibilities of the implemented service were in turn easy of use and the option to expand the functionalities. Pay per user pricing was

seen as a weakness. Also, the relatively small size of the local service provider company and the lack of previous contact and experience with the service provider were seen as threats. (Company XXXX, 2019c).

4.3 Implementation project

4.3.1 Project team responsibilities

At the end of 2019, a partner was selected in the Company XXXX, with whom the Company XXXX began to plan and schedule the project at a more detailed level. The first actual joint meeting with the service provider was held in early February 2020. At this point, the first acquaintance was made with the software as well as the service the Company XXXX would be using. In addition to this, the whole project team introduced themselves as well as their roles in the project. The first meeting included also the practicalities, such as mapping the different stakeholders which are taking part into the project and agreeing about SLA's and insider registers. (Company XXXX, 2020a.)

At the beginning of the project, it was also necessary to define the system users as well as the main users and connect the users to the internal process flow of the system. After practical matters, the project moved very quickly to the issue itself, i.e. to develop and ramp up the implemented system. For the project, separate responsibilities were agreed for the different parties in the project team which mainly consisted from Service provider, Financial reporting team and the Investor relations team. The role of the Service provider is to provide technical and expert support while overseeing the progress of the project. In addition, the service provider keeps the company up to date on possible changes related to XBRL and ESEF and the system upgrades. The service provider is also closely involved in the development of XBRL tags and the internal structure of the system, but for the most part service provider is acting as a supporting consultant. (Company XXXX, 2020a.)

The Financial reporting team was responsible for developing a solution on how the financial information used in the annual and interim disclosures will be imported into the

disclosure management system. In addition to this, the external reporting team was responsible for developing the most automated process possible for gathering financial information, thus eliminating unnecessary manual steps in the preparation process of disclosures and partly the creation the Word and Excel structure within the system.

The Investor relations team was mainly responsible for creating the text sections of the disclosures and the structure and formatting of the disclosure in the system. In addition to this, the role of the Investor Relations team was to develop a separate structure for the management presentation related to the announcement of results, so that the preparation of result presentations can also be automated. The identification of separate internal factors that can be automated internally within the system also played an important role in the design and creation of the structure of the publication and presentations, as well as the text sections. Factors such as this included almost all the figures announced in the text, as well as various "Increase", "Decrease", "Grew", "Decline", "Grew slightly", "Declined slightly", etc. terms that are disclosed especially in the section focusing on to sales, earnings, orders received and order book in Annual and Interim disclosures. These process steps will also be examined further later in this section of the research.

4.3.2 Implementation model

The development plan of the system and the framework for its implementation were obtained from the responses of the service provider company's RFP, which have been well in line with the actual development of the project. Based on the RFP, it became clear that the already selected service provider utilized a third-party solution in their service. As a result, more professional technical support for the system is provided by a third party if necessary. The implementation process itself will be done in close co-operation with the Company XXXX's key finance personnel. From the beginning of the project it was clear that the service provider is willing to work closely in agile approaches with the Company XXXX in order to ensure key finance users to become familiar with the implemented system. (Company XXXX 2019d; Company XXXX 2020a).

Already at the first actual meeting of the project team in February 2020, a common schedule and project plan were agreed. The Service provider suggested that the ESEF mandate related XBRL tagging should be postponed to Q3/2020-Q4/2020. The reason behind this approach was to first focus on implementing the disclosure management system and harness the other benefits arising from the system implementation such as the report and disclosure context automations already in Q1/2020 and Q2/2020. With this approach, key finance personnel in the Company XXXX will be able to free up resources as well as save time already in the preparation of the 2020 Interim reviews. Also, by doing this, the key finance personnel are already familiar with the system before creating the XBRL taggings which minimizes the possibility of errors and malfunctions. Therefore, the tagging process itself was not seen to be resource intensive in this implementation process.

The system and the XBRL implementation were divided into two parts in the project as mentioned (see. Figure 10). The first phase of implementation is significantly more resource intense from these two process steps and it was estimated to take about two months in the early stages of the project. On the other hand, the ESEF implementation (tagging process) itself was estimated to take a maximum of one week. Thus, it was clear that the resources allocated to the project should first be focused to the first phase of implementation, i.e. system ramp-up and the preparation and automation of the report and disclosure structure. (Company XXXX 2019d; Company XXXX 2020a.)

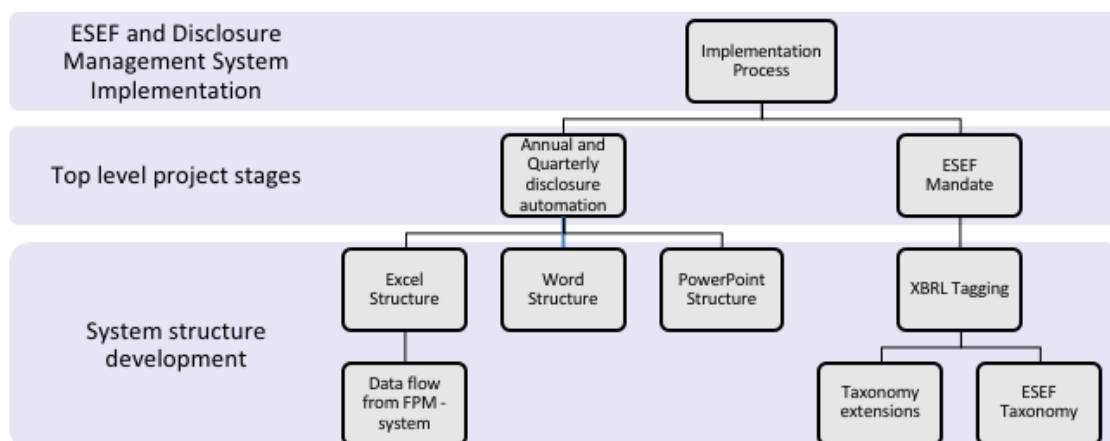


Figure 10. Development stages (Company XXXX, 2020b).

In addition to these project phases, the company initially also planned to automate internal management reporting in the future, such as the preparation of various management presentations. Furthermore, the possibility of streamlining financial data flow without external excels from the FPM system to the disclosure management system has been considered. But currently, these development proposals are still in the planning and discussion phase, and their actual implementation has not started. Further on, these development plans, if implemented, could streamline and automate the Company XXXX's reporting process even more.

4.3.3 Prior external reporting process

The section introduces Company XXXX's initial prior external reporting process and the preparation steps for interim and annual financial statements insofar as it is relevant for this research. In this context, external reporting refers specifically to interim and annual financial reviews which are published for the external stakeholders. Company XXXX publishes interim financial statements four times a year and annual financial statements once a year.

The preparation process for the figures to be published in the Company XXXX's interim and annual financial statements will begin as soon as the figures for the reviewed period

have been completed in the company's consolidation system. This process phase involves the preparation of numerous separate working files which are partly automated and partly relies on manual calculations. The process includes multiple working as in general all the separate notes and primary financial statements are prepared in their own working files, taking up a considerable amount of resources. At this stage, by far the most difficult and resource intense step in the process is the preparation of separate working files, as some of these are not directly automated, but the figures in a particular note tables, for example, must be retrieved from multiple different sources. In the next phase, as some part or sections from the financial and verbal information published in the interim and/or annual financial statements has been completed by the key finance personnel in Company XXXX, the information is traditionally sent to an external graphic designer whose services the Company XXXX has used to design and compile the final published interim or/and annual financial statement reviews. (Company XXXX: 2020c.)

After the Company XXXX has sent the figures to an external graphic designer, the company has to usually wait for a while, usually about a day, until the graphic designer has combined the sent information by Company XXXX to the interim and/or annual report template. Once the external graphic designer has completed the drafting and creation of graphs and visualizations, the end product will be submitted to Company XXXX's Investor relations team. At this stage, the Investor Relations team will provide the draft version to the Financial reporting team, which meanwhile has continued to work on with the pending data. The next phase is to evaluate and validate the draft interim and/or annual financial review and to correct errors and omissions.

Once the draft version has been reviewed by the Finance reporting team, it will be sent back with comments to the company's IR team, which will resubmit the correction suggestions to Graphic Designer. At this point, the missing data will also be provided to the graphic designer so that it can be added to the next draft version. When transmitting the numerical data, also the text sections for the layout are provided in the same or within a separate file. This stage of the process will continue in the same way as previously

mentioned until the figures and text sections in the published material are completed. Key finance personnel within the Company XXXX also has a license for the software used by external graphic designer, and therefore a member of the Finance reporting or Investor relations team can proceed with minor changes to the foldable version of the material. But in the big picture, the folding process of the report is the sole responsibility of the external graphic designer, leaving the verification and review of the figures and text sections to Company XXXX's responsibility. After these process steps the Interim or/and Annual financial review is ready to be published for the stakeholders.

In addition to these steps, the Finance reporting and Investor relations teams have been responsible for creating result and financial position related presentations, such as internal Audit Committee presentation, Balance Sheet presentations, Cash Flow presentations and external Result presentations.

4.3.4 Automated external reporting process

The disclosure management system implementation carried out in a Company XXXX causes significant changes in the company's external reporting process as well as further development opportunities. Overall, the aim is to significantly simplify and automate the reporting process so that resources can be allocated more into business supporting and financial analysis tasks. In addition, the external reporting process will change due to the ESEF mandate, which has served as the most significant starting point for the company's external reporting automation project. The automation of the reporting process and the fulfillment of the ESEF mandate requirements takes place by implementing a disclosure management system for the company, which enable the company to automate the various stages of the external reporting process and perform the ESEF compliant tagging process. (Company XXXX, 2020d.)

The development of the automated external reporting process was started in the company through workshops with the participation of external consultants from the service provider and key finance personnel from Company XXXX's Investor relations and Finance

teams. In summary, during the workshops, the company focused on identifying various development and automation opportunities in interim and annual financial disclosures. At this stage, however, the project focused most significantly on the automation of interim reports, as at the beginning of the project it was agreed that the preparation of the annual financial review would take place in the latter half of the year. Very quickly after the first project meeting, the project staff moved to work on their own responsibilities for the project, in this case the Finance reporting team focused on building the most comprehensive and simple excel structure for the source data. In addition, the team was responsible for compiling spreadsheets in accordance with the published interim and annual finance reporting structure, as well as the internal data structure into disclosure management system. The main responsibility of the Investor Relations team was to build the “Word” structure corresponding to the interim publication into the system, and to identify in-text sentence structures that could be automated with the system functionalities. The task of the Investor relations team was also to build an automated Power-Point structure in the system, which will also enable the automation of the result presentation, which is published on quarterly basis.

At the beginning, most of the Finance reporting project team resources were allocated for creating data structure which will be later imported to the disclosure management system. The initial data source built at this early stage of the project included the financial graph and table structure for the Interim Report. After creating the table and graph structure, separate data retrieve sections and data bridges were built in to excel, which consisted of FPM system parameters that retrieve data from the system used in tables and graphs, which are later linked to corresponding tables in the spreadsheets. In connection with this process step, it was possible to automate a considerable part of the published figures and the manual process steps were identified.

After the development of data source excel, similar data structure was created in to disclosure management system, which utilizes the previously created summary excel as a data source. The data structure within the system itself contains considerably more

functionalities than normal desktop excels. The final excel structure embedded in the system consisted the final financial sections, tables and graphs which later on will be transferred via system variables into the Word structure (See. Figure 11.). Embedded excel uses separate data queries to retrieve data from the initial data source excel, which is exported to the cloud service which serves as a data base for the system. Besides these, efforts were made to fully automate the embedded excel structure to make its use as streamlined as possible. Language structures in both Finnish and English were created in excel for each table or section, so that the spreadsheets can be utilized in both English and Finnish disclosures without any manual changes.

In addition, the disclosure management system include functionality allowing the creation of system variables for the excel content that can later be automatically transferred to the Word/PPT structure using the defined variable codes (See. Figures 11 and 12.). In this case, tables, graphs and figures will be automatically updated directly into the correct locations in the Word/PPT structure allowing by updating the data in the source file. At this stage, verbal descriptions such as “declined by XX%”, “grew by XX%”, “clear decline”, “significant growth” etc. was created in the variables to automate published text sections for the disclosures.

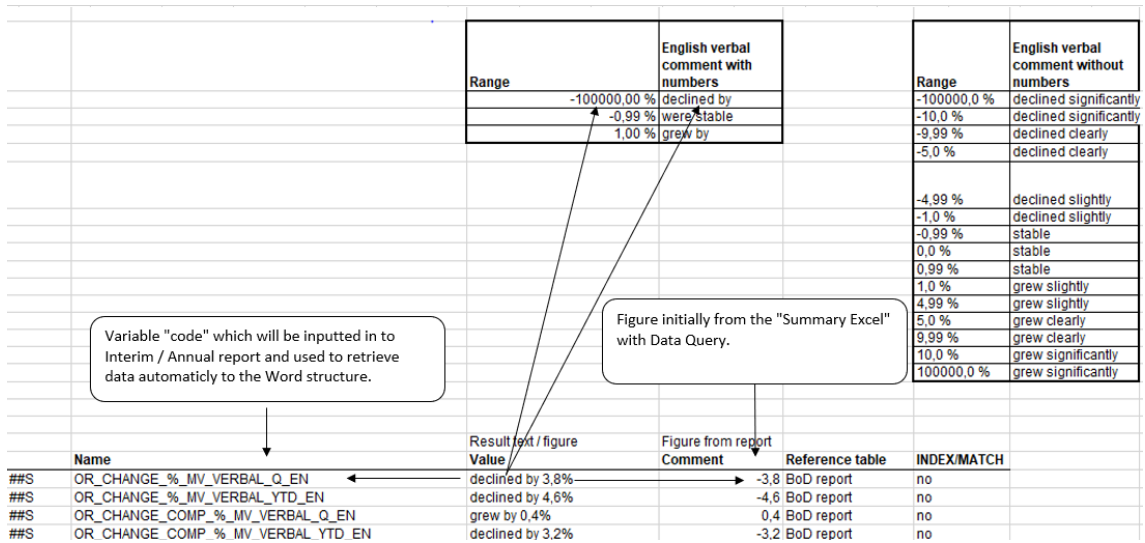


Figure 11. Example of Disclosure Management System variable and it's functionality. (Company XXXX, 2020e).

Text section in Disclosure Management System edit mode.

##D<TIME_VERBAL_Q_EN> ##D<YEAR_CUR>

Orders received

##D<OR_CHANGE_%_MV_VERBAL_Q_EN> as compared to ##D<TIME_VERBAL_Q_EN>

##D<YEAR_PREV> and totaled EUR

##D<OR_VALUE_MV_Q_CUR> million. At comparable

Generated text section in Disclosure Management system.

July–September 2020

Orders received declined by ██████ as compared to July–September 2019 and totaled EUR ██████ million. At

Figure 12. Example of text section with automated variables in Disclosure Management System. (Company XXXX, 2020e).

The above figures summarize one of the multiple benefits delivered by the disclosure management system for the Company XXXX. Following the same logic, a total of about 180 different in-text variables and about 35 different tables and graphs were prepared for the Q1/2020 interim report. This deleted the need for manual update of more than 200 objects in the interim report. This is saving considerable resources as well as significantly reducing the number of human errors in the disclosure. In the above example, it should be noted that this example only applies to the interim report, and the benefit provided by the system is wider in the annual financial review that includes approximately 200 in-text variables and 100 tables or graphs.

The first part of the project, i.e. the automation process of Interim reports, was carried out during Q1/2020 and Q2/2020, later on in the second half, the focus was shifted

towards the annual financial review. For the annual financial review, the process very much follows the development process of interim reports. Naturally, however, the annual financial review contains significantly more information than the interim report, which is why considerable resources had to be as well allocated for this step. At this stage, however, it is possible to take advantage of the development phases performed for interim report, as partly the same data and structure is also utilized in the annual financial review. However, in the process of developing the annual financial review, there will also be a XBRL tagging phase in order to comply with the ESEF mandate.

With the implementation of the Disclosure Management System and automation, the Company XXXX's preparation processes and finalization of interim and annual financial review have become almost entirely an internal company process, and the outsourced disclosure folding and design process no longer needs to be performed on the same scale as in the initial reporting process. According to the new process, all data entries take place as an in-house process, so there is no delay in entering financial information, text sections or creating draft versions, as the implemented system allows draft versions to be taken whenever needed. Changes to the content of the disclosure can also be made directly in the system. In the case of interim closing, the use of an external graphic designer has been completely discontinued and in the case of annual financial review, the external service is used only in the folding of the final PDF publication. In this case, the report in XHTML format is produced completely as an in-house process. With these changes, the validation and correction of reports can be done immediately, and after the changes, the system can produce a new version of the report, which streamlines the validation process. The validation process is simplified by streamlining the data flow with the use of data variables, ensuring that all the published figures will be the same as in the data source. As a result, separate validation rounds can be performed considerably less than before, thus saving a significant amount of time and resources from the key finance personnel. With the automated reporting process, end-product validation has now shifted more to early-stage checks in the data source itself. All in all, streamlining the process enabled significant resource savings from the disclosure validation process.

4.3.5 Changes in reporting process

As a result of the changes, the Company XXXX's external reporting process underwent significant changes. At the beginning of the project, a clear goal was defined, in which the project aims to automate the external reporting process as comprehensively as possible in order to generate as wide resource savings as possible. This allowed the allocation of significant resources for the implementation process itself, as the used resources will be paying off when the implementation is completed.

The external reporting process changed with the most significant changes both in the preparation of the published disclosures, as well as in the finalization of the work itself. The end creation of primary financial statements and note sections in to published report structure was largely automated, and the amount of manual work was reduced. Variables were used to minimize the number of human errors, allowing the data flow from source data directly to the published interim or annual report. The text sections of the publications were also partially automated, as manual input of almost every figure to the text sections was eliminated. It was also possible to automate the description of the movements of certain financial factors in the text sections, which in turn resulted significant reduction in resource intense steps. This automation refers to the utilization of the variable structure illustrated in Figures 12 and 13.

In addition, a significant change is the reduction of used outsourced services, as the interim and annual reports were previously folded and designed with the help of an external graphic designer, but with the new process, the entire finishing and designing is done internally. From most parts, this applies also to the preparation of annual financial review, where the process phases executed by external graphic designer is minimized to cover only the folding of final PDF. In addition to these changes, the XBRL tagging was included into the reporting process in accordance with ESEF mandate. The tagging process itself is performed on directly to the imported primary financial statements in the disclosure management system by attaching respective tags in to the line items. At this stage, the tagging process is performed only for the primary financial statements. Initially, the

purpose was to tag also the notes in annual financial statements, but the Company XXXX decided not to proceed with the note tagging as it will not be mandatory until 2022.

4.3.6 XBRL tagging

ESEF requires that all annual financial reports including IFRS consolidated financial statements has to be marked with XBRL tags enabling machine readability. The XBRL tags has to be embedded into XHTML document by using the iXBRL technology allowing XBRL tagged data to be combined in to human readable form. (ESMA 2020). In Company XXXX, the tagging was implemented as an in-house project utilizing the implemented Disclosure Management System. The system implemented by the Company XXXX includes the built-in ESEF Taxonomy, which simply enables the tagging of both primary financial statements and note sections although Company XXXX is only tagging the primary financial statements at this point. The tagging process was performed as a bolt-on procedure, by importing the data into system and attaching the XBRL tags in to the excel file.

The tagging process utilized the system embedded ESEF taxonomy, which is from most parts based on the IFRS taxonomy. Relying on IFRS taxonomy greatly facilitated the tagging process, as the key finance personnel responsible for the tagging were already familiar with the taxonomy. In the tagging process, both pre-defined ESEF tags and separate taxonomy extensions were used. Extensions were made, for example, by anchoring the self-created tag to two pre-defined tags, therefore combining two initial tags in to one. In addition, extensions were made in another way by creating self-created tags under an already existing initial tag. Taxonomy extensions were always anchored to the closest tag from the accounting perspective. The disclosure management system enabled easy creation of a taxonomy extension, which made the tagging process relatively simple and straight forward. However, the aim was to minimize the creation of taxonomy extensions, as extensive use of them was seen as a risk, which was also emphasized in the theoretical part of this thesis.

Overall, the tagging process is very simple, but due to both system engineering and taxonomy related issues, the process also included risk of errors. In Company XXXX, the tagging process was found to involve three main risks. First, all taxonomy tags are either credit/debit based by default. However, in the Company XXXX's primary statements, items are reported with signs, negative or positive, in which case they show an expense or income. This becomes a challenge in the tagging process, as tags have a built-in credit/debit function. Therefore, especially when tagging negative items, it had to consider whether the tag is credit or debit by default, and thus consider whether the negation needs to be removed from the tag. The risk of reporting false positive or negative figures has previously been emphasized by Brands (2013a).

The second identified risk also related to the credit/debit function of the tags, as there are accounting items that can be either negative or positive in the financial statements. Items like this can be found especially from the changes in equity and comprehensive income. For example, if the same accounting item is positive for the current year but negative for the previous year, the tag may require adding or removing a negation, depending on the default side of the tag (credit/debit). Therefore, items that can be either positive or negative has to be re-tagged or validated separately on annual basis. The third risk identified in the Company XXXX was the common use of the wrong tag and the creation of incorrect extensions. In order to minimize the risks of incorrect tags and taxonomy extensions, Company XXXX commissioned an XBRL tag auditing service from an external audit firm.

4.3.7 Risks and opportunities arising from the changes in reporting process

As a whole, Company XXXX's regulated external reporting process underwent significant changes during the 2020. As a result of these changes, both new risks and opportunities have been identified in connection with the reporting process. In terms of continuous development, the Company XXXX has identified the need to identify as effectively as possible all the risks that have arisen as a result of the process change, so that these can be taken into account now and in the future. The aim is to minimize the existence of risks,

and therefore the risks identified in the process are also eliminated as widely as possible. In order to improve development, the company seeks to identify not only risks but also the opportunities arising from the changes.

During the implementation project, a number of different risks was identified in the Company XXXX. Errors in data bridge, data flow and data source in automated figure retrieve such as incorrect parameters in the FPM and/or incorrect linkages between the reports were identified as major risks. In addition to this, incorrect comparison period data in the initial data source and errors in variables used within the text, table and graph sections in the interim and/or annual review are seen as a risk. Above kind of errors includes e.g. incorrect linkages and formulas within the Excel embedded into the system. Besides these, system malfunctions and errors are seen as a significant risk close to the date of publication of the financial statements. In this case, the Company XXXX may not have time to wait for the fault to be rectified, which requires the company to take preliminary drafts from the published disclosures in order to have back up versions in case of malfunctions occurs in the system.

In addition to the above internal system risks, the Company XXXX identified significant risks in the ESEF tagging process, which were discussed in more detail in a previous ESEF tagging section. Risks related to human resources were also identified in the company. Human resource related risks are e.g. situations where key finance personnel with the responsibility and experience of the system leaves from the company or changes its role within the company. To avoid this risk, company is constantly spreading the knowledge within different key finance personnel and training new users for the system. All in all, the system has decreased the possibility of human errors, but still the data source and structure management demand humane processes, which therefore possess a risk for human errors.

Previously in this study, the benefits of the implemented system in the Company XXXX has been reviewed. On the other hand, the most significant future opportunities in the

company relies on the option of embedding the disclosure management system deeply in to Company XXXX's financial planning and management system (See. examples of the advantages in embedded and built-in approaches in the sections 2.5.3 and 2.5.4). Naturally, the in-depth integration of the disclosure management system into the reporting system would bring numerous benefits to the Company XXXX. Benefits like this would increasingly streamline the reporting process, among other things, by partially eliminating the need of maintaining the current large excel infrastructure both inside and outside the system. By embedding the system into FPM Company XXXX could retrieve all the necessary financial data directly from the initial system data base, without the use of external excels. As a result, tagging according to ESEF mandate could also be mostly automated by attaching tags directly to the source data. In addition, the figures required for the preparation of the interim and annual review could be retrieved directly from the FPM's initial data source, thus increasingly minimizing human errors. As a result, Company XXXX believes that the external reporting process could increasingly save time from manual work steps while streamlining process steps that require significant resources. The integration is also seen to improve the performance of the disclosure management system, as it would not require the separate inclusion of separate excel structures on an equal scale, thus reducing the amount of consumed system capacity.

In addition to the complete integration of the system, one opportunity for Company XXXX is to also direct the utilization of the system more and more towards management accounting. Currently, the license between Company XXXX and the service provider does not allow the system to be used for management accounting. However, this option is being evaluated by Company XXXX and utilizing the system also in management accounting could be seen as a significant opportunity for Company XXXX. In management accounting, the system would be able to partially automate various PowerPoints used in managerial decision-making. This would make it possible to extend the benefits of the system beyond external financial reporting, which would therefore release resources for key finance personnel, allowing time to be allocate more in to business supporting tasks.

The implementation of above-mentioned functionalities would require the company to make both license changes as well as significant changes to the system itself. Although, extending the utilization of the system for management accounting would be relatively easy, by creating different system structures for example for different business lines or areas. In its simplest form, one or more excels would be imported into the system in the same way as in external financial reporting, which utilizes the data source file on the disk drive as its source data. After that, for example a PowerPoint structure is created inside the system, on the basis of which the figures, tables and graphs in the presentation can be automated by creating separate variables in the system, which are attached to the PowerPoint presentation. As a result, manual updating of PowerPoint presentation sections could also be minimized allowing more time for controllers and analysts to analyze business and finance development in-depth. In addition to this, it would be possible to add in-text variables to describe development of different business-related topics in the same or a broader way as previously introduced in the Figures 11 and 12.

In turn, if the entire disclosure management system data flow were to be embedded in the company's FPM, this would require an entirely new project. Naturally, such an extension of a project or the implementation of a new project would require considerable resources from both the company's Finance and IT departments. However, this possibility has been considered by Company XXXX as an option and its possibility should be further explored.

4.4 Summary of the results

The project related to the ESEF mandate and mandatory XBRL tagging was launched in the Company XXXX in 2019. As a result of the initiated project the Company XXXX will be able to comply with new ESEF mandate by tagging with XBRL elements the primary statements of annual financial report in 2020. The ESEF mandate stipulates that each publicly listed company operating in the EU region must submit the 2020 annual financial report in XHTML format to the national database. According to the mandate, the primary statements of the financial statements company be tagged with XBRL tags according to the

ESEF taxonomy. To this end, Company XXXX began cooperating with an external service provider whose role is to provide Company XXXX with a disclosure management system that can be used to perform XBRL tagging. In addition, other benefits of the system were addressed during the project design phase. Besides the XBRL tagging, the system was found to deliver an opportunity to automate interim and Annual Financial Review and the ability to move the interim and annual financial review preparation process entirely to an in-house project. In this case, deleting the need for use of an external communications agency for the interim or annual financial review folding process itself. The key stakeholders in the project at this stage were Financial reporting team, Investor relations team, Finance development team and the consultants from the Service Provider. Each of the stakeholders received their own roles for the project. The project also set targets and a timetable to focus on automating and preparing Q1/2020 and H1/2020 reports with the use of disclosure management system in the first half of 2020, and later on to focus on preparing the 2020 Annual Financial Review and XBRL tags in the second half of 2020.

Because of the system capabilities, the Company XXXX decided to carry out the XBRL tagging as an in-house process and also automate and centralize the preparation process of interim and the annual financial review. The development phase in the project officially began in early 2020, when Company XXXX focused on creating a system structure for the disclosure management system and separate data sources and data bridges to import the used financial data into the implemented system. At the beginning of the project, the Company XXXX began to automate and centralize the preparation of Q1/2020 interim Report, which would also act as a test on how well the system can be used in automation and preparation process of interim disclosures. The preparation of the Q1/2020 interim publication required significant resources from the Financial reporting and Investor relations teams, as the implementation had to be made from scratch at this stage.

The Q1/2020 interim report was successfully created with the system, and the services of an external communication agency were not needed in the preparation process. At

this stage, the project team succeeded to automate a significant number of published tables as well as in-text figures, but still significant development steps were identified for the project. In Q1/2020 report, the Company XXXX used approximately 180 in-text automation variables as well as 35 table variables. For the H1/2020 or the first six months of the financial year report, the data source was expanded allowing more extensive automation by using FPM data retrieves as well as the internal variables of the disclosure management system. The preparation of the Q3/2020 interim report was carried out without any major changes in accordance with the preparation of the H1/2020 report, and no significant changes or development steps were made to the process for the interim report itself. Although, during Q3, the process of expanding the data source for annual review purposes was started.

On a larger scale Company XXXX undertook the change preparations for the Annual Financial Review in October 2020. At that time, a schedule was defined for the preparation of the Annual Financial Review's external data source, internal text and table structure, data bridges, variable creation and XBRL tagging. Approximately two-month development period was defined for the previously mentioned development steps, as none of the project members was able to allocate the entire working hours for the project. At this stage of the project, the data source used in the interim reports was further developed by adding the necessary data structure into the data source and automating the stream from the Company XXXX's FPM system to the disclosure. The data bridge was as streamlined as possible in order to minimize the number of manual steps at this stage of the process. As the amount of data increased, the internal data structure of the system was also developed and expanded. At this stage, almost all tables as well as in-text figures were mapped from the Annual Financial Review, for which separate data variables were created. While the overall data structure was developed, the focus was also on creating a Word structure for the system in accordance with the previous year annual financial review. Later, each annual financial review related data variable was attached to the Word structure, which eventually automated more than 200 in-text number sections as well as 100 tables and graphs.

The final phase of the project focused on creating XBRL tags for primary statements in accordance with ESEF mandate. The process was left in Company XXXX at the end of the project, as it was not seen to take up significant resources to complete. Also, updates were made to the disclosure management system that affected the start time of XBRL tagging. In retrospect, XBRL tagging should have started earlier, as tagging did not take place until December 2020, it was found that there was only a short time period for the tagging preparations whilst it required significantly more resources than initially thought. Due to the tight schedule, Company XXXX also decided not to expand the tagging for the Notes sections of the Annual Financial Statements, even though it was initially in plans. The tagging process included risks which were closely related to the use of incorrect tags, incorrect taxonomy extensions, and incorrect credit/debit functions. To minimize errors Company XXXX also went through the used tags with a consulting company that acted as a service provider. In addition, external validation service was used to verify the taggings.

As a result, the Company XXXX's external reporting process underwent significant changes, which also identified new process-related risks as well as opportunities. The most significant risks identified were related to data retrieve parameters, data quality, errors in data flow, erroneous variables used in automation, system errors, and errors in XBRL tags. The most significant future opportunities and development options were identified in connection with the expansion of the utilization of the system. Disclosure management system could also be used to automatize the company's internal financial reporting. Wider development opportunities are also closely related to the full integration of the system into Company XXXX's FPM system. Complete system integration would significantly eliminate the possibility of data source and data flow ancillary errors, but would also, of course, create new risks for different stages of the reporting process.

Previously, the theoretical part of the study presented the effects of XBRL implementation in the group reporting process. The XBRL implementation succeeded in streamlining the companies' reporting process by reducing the amount of manual work, which

contributed to resource savings as well as time savings in the companies studied. (See Robb et al. 2016; Pinsker & Li 2008). In Company XXXX, the XBRL implementation itself was not found to produce significantly similar results at this stage, as XBRL tagging was performed manually to primary financial statements, and thus XBRL tagging was not embedded in to Company XXXX's FPM system. In the tagging process, Company XXXX had to create multiple taxonomy extensions which emphasizes the need of developing and extending the ESEF taxonomy in order to avoid miscellaneous tagging. Too narrow a taxonomy causes the extensive use of taxonomy extensions, which in turn reduces the comparability of reports and increases the possibility of errors (see Brands 2013a;2013b; & Harris & Morsfield 2012). Nevertheless, the implementation of the disclosure management system in Company XXXX was found to save time on disclosure preparations. However, the most significant results will be measurable in the forthcoming years, as in the first-year submission Company XXXX had to invest in ramping up the system as the implementation demanded significant resources. The key finance personnel in company XXXX sees that in the forthcoming years as the system infrastructure is already developed, the benefits will be greater and more thoroughly measurable.

5 Conclusions

This thesis focused on the implementation of XBRL and disclosure management system in the Company XXXX and what type of changes, risks and possibilities the implementations cause in the group reporting process. By the mandate of ESEF the XBRL tagging for primary financial statements is becoming mandatory in the EU region for all publicly listed companies from the year of 2020 and onwards⁴. To comply ESEF mandate, Company XXXX implemented disclosure management system which provides system environment for the tagging process. In addition to this, disclosure management system enables significant process automation and streamlining in group's external reporting process.

5.1 Result contribution

The subject of this thesis is currently highly topical in Europe and it has not yet been extensively studied in the EU. Therefore, the results of the thesis can be considered supporting and expanding the current theory around the topic. The following three research questions were researched in the study:

- What is the purpose of European Single Electronic Format reporting and how it impacts the regulatory financial reporting?
- How the implementation of XBRL is executed in the Company XXXX?
- How the XBRL tagging and Disclosure Management System is changing the group reporting process and what challenges and opportunities it causes in Company XXXX?

The first research question examines what exactly is the European Single Electronic Format and how it is impacting the regulatory financial reporting within the EU. ESEF as a

⁴ At the end of the study in December 2020, the European Parliament and the Council agreed to postpone the application of the ESEF for one year to the financial year beginning on or after 1 January 2021 (See. European Commission 2020; Finanssivalvonta 2020). This study and the project were carried out on the assumption that the mandate would take effect according to the original schedule. The postponement did not affect for the project.

subject was discussed extensively in the theoretical part of this thesis. As a result of the examined theoretical material the ESEF mandate was prepared in order to harmonize publicly listed companies' annual financial reports. In addition to this, the objectives for ESEF are to allow easier external reporting process for issuers while facilitating the accessibility, analysis and comparability between the issued annual financial reports. Based on the regulatory technical standards all annual financial reviews have to be prepared in the form of XHTML, while also containing XBRL tags for each of the IFRS consolidated financial statement from the year of 2020 and onwards.

The second research question focused on examining how the ESEF mandate related XBRL tagging is executed in the Company XXXX. In the early stages of the project, Company XXXX considered between two different approaches for XBRL tagging. In the first approach, the disclosure management system is implemented in the Company XXXX, which is then used to perform XBRL tagging and external reporting process automation. On the other hand, as a second option, a simple bolt-on approach for XBRL tagging was considered. In this case, the company would not implement a separate disclosure management system, but only XBRL tagging would be performed according to the bolt-on approach. After evaluating these different approaches, Company XXXX decided to go forward with the first option, the disclosure management system implementation. Therefore, the XBRL tagging was to be done with the use of the tagging function within the disclosure management system. This approach was chosen as Company XXXX found the additional automation capabilities as a significant benefit and option for developing and streamlining the external reporting process. In its entirety, the tagging process was not carried out in Company XXXX until the end of 2020, as it was seen to require only small resources. Therefore, there was no need to allocate significant development time for this phase of the project. All in all, the tagging process was performed in close collaboration with Company XXXX's service provider to ensure correct tagging and to minimize the possibility of errors. Based on the results the full-fledged management of tagging process and the tag validation becomes especially important in order to minimize possibility of errors. In addition to these, to ensure correct tagging it is highly recommended to use a system which

has tagging validation function embedded into it while also if possible, to use external validation services, for example from auditing companies. By following these validation steps, the correct use of taxonomy elements should be verified.

During the tagging process, multiple taxonomy extensions was created, by combining existing taxonomy elements and by creating own elements and anchoring them into the closest tag from accounting perspective. During the tagging process it came clear that the ESEF taxonomy was too narrow, and from the Company XXXX's perspective, the taxonomy didn't include enough detailed tags in several cases. As learnt from the theory, the amount of taxonomy extensions should be minimized in order to minimize possibilities for errors, therefore it became clear that the taxonomy still has to be further developed.

The third research question focused on how the implementation of XBRL tagging and disclosure management system is changing the external reporting process within the Company XXXX and what type of opportunities and risks lays in it. Based on the results the group reporting process went through extensive amount of changes. Company XXXX's external reporting process underwent the most significant changes with the process automation enabled by the disclosure management system. With the system implementation, the external reporting process with its various stages was able to be centralized more into the company's internal process. With this and automation related factors, the preparation of interim and the annual disclosure was streamlined, enabling resources of key finance personnel to be allocated in more business supporting roles. In addition, as an entirely new step in the process, XBRL tagging was incorporated into the annual financial review preparation process. However, it was clear that as the disclosure management system is now implemented, the most significant time and resource savings will be more visible in the forthcoming years.

The most significant risks posed by the process change were most significantly related to the disclosure management system's data infrastructure, system functionality, human

errors causing incorrect variables used in automation and incorrect data parameters used in FPM data source. In addition to this, significant risks were identified in the XBRL tagging due to the possibility of the use of incorrect tags, tax extensions, and incorrect debit/credit entries in the used tags. The possibilities on the other hand lies in the deeper integration of the disclosure management system with the company's FPM system, as well as utilizing the system enabled automation also in the company's internal reporting.

The results of the study enabled the theory of XBRL as well as the European Single Electronic Format to be expanded and augmented, as previously there has been relatively small amount of academic researches about the subject in Europe. In addition to this, the research focused to describe the implementation of disclosure management system, which can be utilized to automate the external reporting process and disclosure preparation process in publicly listed companies. Thus, the research also directed academic research towards the automation of the external reporting process within the publicly listed companies.

5.2 Limitations of the study

The following limitations should be considered when reading and analyzing this thesis and its results and conclusions. The study was carried out as a case study in one individual company, and the research measures were performed in this company. The most significant research methods used were researcher observation, Company XXXX's internal documentation, informal discussions with Company XXXX's key finance personnel and external service provider consultants, among other project related staff. The author of this research has also been very closely involved in the ongoing project in Company XXXX. Due to these factors, the results of this research are very closely related to the researcher's own understanding of the different stages and measures taken in the project, which, however, are based on discussions and meetings with project staff, system and project documentation and project development. Therefore, the results might differ in other environments and with different implementation methods. The research was

carried out in the Company XXXX, which is why the results, especially those related to the technical implementation, should be considered as an individual result and should not be generalized as the results can vary between different companies and approaches. The topic of research is also very new in Europe, which is why the theory may develop very quickly. The study has been carried out with the best current information around the topic, but it is clear that the development of ESEF and XBRL in Europe is continuously ongoing.

At the end of this study in December 2020, the postponement of the introduction of the ESEF was announced by a decision of the European Commission and the Council. According to the decision, the application of the ESEF will only be mandatory for financial years beginning on or after 1 January 2021. However, it is still possible to apply ESEF according to the original time schedule. (see. Finanssisalvonta 2020; European Commission 2020). This study was conducted on the assumption that the ESEF will enter into force according to the original schedule. In addition, the delay will not result in any changes in Company XXXX, as Company XXXX has decided to publish its financial statements as initially planned with XBRL tags in XHTML format.

5.3 Suggestions for future research

European Single Electronic Format and XBRL are very new concepts in Europe. Therefore, the topic will certainly change and develop in the future, which will contribute to the need for research. By 2020, there hasn't been standardized electronic reporting practice in Europe, so XHTML filings with this year's XBRL tags will be the first large-scale filings with ESEF taxonomy containing XBRL tags in Europe. For this reason, further research should be focused on how compliance with ESEF mandate was implemented on a wider scale in Europe and how XBRL tagging were carried out. Possible research directions may include also research towards the ESEF taxonomy and is it broad enough or should it be extended in order to minimize need for the taxonomy extensions. In addition, it would be important to study has there been significant amount of tagging errors in the filings, as researching this topic might help to further develop the ESEF taxonomy.

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