

Design principles for Standard Business Reporting (SBR) taxonomy development: Evidence from Finland

Hannu Ojala, Esko Penttinen, Jill Collis and Tuija Virtanen

Abstract

Standard Business Reporting (SBR) is a consolidated reporting model for the digital transmission of financial data to several statutory bodies. It requires the development of a national taxonomy, which facilitates the joint tax, statistics and financial reporting through a common government gateway, thus reducing the administrative burden of statutory reporting. An SBR program is a complex and innovative project that requires the co-ordination of public and private constituencies. Drawing on the findings of a longitudinal study in the Finnish SBR program, we contribute to the literature by identifying a set of design principles for SBR taxonomy development: (1) competence, (2) win-win-win vision, (3) multi-channel communication, (4) intelligent scope, (5) expertise commitment, (6) track record, and (7) co-creation. These principles were derived from an inductive analysis of empirical data collected from multiple sources. Our findings offer a guide that will be useful to other jurisdictions embarking on similar SBR initiatives.

Keywords

Design principles, Taxonomy development, Standard Business Reporting (SBR), eXtensible Business Reporting Language (XBRL), digital financial reporting, stakeholder engagement

Hannu Ojala is a Professor of Accounting (acting) at the University of Tampere, School of management and a Professor of Practice at Aalto University School of Business

Esko Penttinen is Professor of Practice of Information Systems at Aalto University School of Business

Jill Collis is a Director of Accounting and Auditing Research Group, and a Reader, Ph.D. at Brunel University London, College of Business, Arts and Social Sciences

Tuija Virtanen is a University Lecturer of Accounting at University of Helsinki

1. Introduction

This study identifies the design principles for Standard Business Reporting (SBR) taxonomy development. SBR 'provides governments and businesses with an unequivocal, cost-effective, secure and adaptable method for the exchange of business information between organisations in a reporting chain' (<https://joinup.ec.europa.eu/document/sbr-standard-business-reporting-sbr>). It is based on international open standards, such as eXtensible Business Reporting Language (XBRL), which facilitate the transmission of structured data between businesses and government agencies, and allow the information to be reused easily. SBR allows the simultaneous reporting of information through a common government gateway that satisfies the statutory requirements of the tax authority, business register and other government agencies. Instead of requiring companies to prepare different financial reports for different government agencies, SBR provides a 'one-stop-shop' that reduces the administrative burden of financial reporting (OECD, 2009).

SBR requires the development of a national taxonomy that reflects the standard terms used in company law and Generally Accepted Accounting Principles (GAAP). The taxonomy provides a 'data dictionary' that permits each item of data to be labelled (tagged) in an unambiguous standard way. The taxonomy is linked to the terms used in business and accounting software to ensure consistency for the reporting entity and the government agencies using the data. The underlying tagging technology is based on international open standards, such as XBRL. XBRL is a member of the family of languages based on eXtensible Markup Language, (XML), which is a standard for creating, exchanging, and analysing business information over the Internet (Eierle, Ojala and Penttinen, 2014). The technology attaches semantic meaning to the data reported and

results in structured digital data rather than unstructured hard copy or pdf documents. The process is highly automated from the data collection and transfer stages to the validation and processing stages, and businesses can automate the generation of government reports directly from their accounting systems.

SBR initiatives are a response to national and regional policies aimed at reducing the administrative burden of statutory financial reporting. In Europe, SBR programs address the need for improved standard-setting procedures and increased interoperability, which are identified as keys to success in Pillar II of the European Commission's digital agenda. The Digital Agenda for Europe was launched in 2010 and is aimed at boosting Europe's economy by delivering sustainable economic and social benefits from a digital single market (EC, 2014a). SBR initiatives in Europe are also a response to the EU Accounting Directive (2013/34/EU) and the Transparency Directive (2013/50/EU).

In an SBR program, decisions are made in a balanced mix of public and private fora in accordance with the SBR governance. The parties must establish a common set of data elements (the content taxonomy) and the related XBRL specifications (the technical taxonomy). The implementation includes establishing a common government gateway to receive the digital data to be forwarded to the relevant government agencies (OECD 2009). According to the European Commission (EC, 2014b, n.p.), SBR provides governments and companies with 'an unequivocal, cost-effective, secure and adaptable method for the exchange of business information between organisations in a reporting chain'. While there are numerous studies on digital business reporting standards and XBRL, there has been no research into the design principles for such standards in general and SBR taxonomies in particular. Tangential to our research, Bharosa et al. (2011) studied the

overall SBR implementation and identified key transformation principles to guide stakeholders. However, to our knowledge, this is the first study to address the question of how to design an SBR taxonomy that requires the concerted efforts of both public and private constituencies.

In order to shed light on the relevant issues and challenges, our inductive study addresses the following research question: What are the guiding principles for designing an SBR taxonomy? We addressed this question by conducting a longitudinal study of the Finnish SBR program between 2009 and 2015. In Finland, the relevant government agencies are the business register, the tax authority and the national statistics office. Taking a qualitative approach, we interviewed the key stakeholders (both private and public) participating in the program. Our study contributes to the literature by identifying a set of design principles for developing an SBR taxonomy: (1) competence, (2) win-win-win vision, (3) multi-channel communication, (4) intelligent scope, (5) expertise commitment, (6) track record, and (7) co-creation. Our findings offer a guide that will be useful to other jurisdictions embarking on SBR initiatives using open standards such as XBRL. In addition, our study contributes to a better understanding of how open standards can be developed in a complex and innovative program that requires the co-ordination of public and private constituencies.

The remainder of this article is structured as follows. In the next section, we review the literature on the development of technical standards in general and XBRL in particular. We also discuss the SBR initiative in Finland in the context of similar programs in other countries. In the third section, we explain our methodology. In the remaining sections, we present our findings, discuss the implications of our study and suggest avenues for further research.

2. Literature review

2.1 Vertical information system standards and their development

Standardization consists of two interlinked steps: development and implementation. Our study examines the development stage, as we focus on the design of a specific type of digital business reporting standard, namely an SBR taxonomy based on XBRL. XBRL is an open standard, free of licence fees, maintained by a non-profit organization, XBRL International. It is one of several XML languages and is increasingly used as a standard means of communicating information between businesses, using the Internet stack for connectivity purposes. In a national SBR program, the associated taxonomy will reflect the standard terms used in legislation and GAAP of that jurisdiction. As a result, a specific SBR taxonomy needs to be developed in each country due to international differences in regulatory frameworks for the statutory filing of financial data.

SBR is an example of a vertical information system in which data are communicated by reporting entities to one or more statutory bodies rather than horizontally to industry peers. Overall, standardization reduces transactions costs and facilitates economies of scale through interchangeability between systems (Kindleberger, 1983). Vertical information system standards, in particular, allow a more efficient data integration in the vertical information flows by providing common data definitions and structures through the use of a common conceptual schema (Goodhue et al., 1992). In practice, vertical information system standards enable the removal of manual data rekeying from system to system and, thus, pave the way for a more efficient reuse of data in the process. On the other hand, the primary cost of standardization is a loss of variety (Katz & Shapiro, 1994) as the various participants in the vertical information flows must adhere to the common data schemas.

Standards are set by private parties such as

leading firms in industry, or by public constituencies such as governments. They are often developed by a consortium whose interests must be aligned. Standards are technical specifications designed to promote co-ordination between the parties (Markus et al., 2006). Development of standards can be problematic. First, the heterogeneity of interests can be detrimental to standard development (Greenstein, 1992; Weiss & Cargill, 1992) and problems may arise from the divergence of interests between the vendors and users of the standard (Foray, 1994). Second, standard development portrays the characteristics of the prisoner's dilemma (Foray, 1994), as no one has the incentive to contribute to the development of the standard because those who have not contributed cannot be excluded from enjoying the results (Markus et al., 2006). The literature offers a number of solutions to this problem. Standard developers are advised to pursue standard development as collective action (Kindleberger, 1983; Weiss & Cargill, 1992), where the key is in the collective participation of representative members of the heterogeneous user groups (Markus et al., 2006). Successful vertical information systems standards consortia must include heterogeneous groups of user organizations and IT vendors without fragmenting (Markus et al., 2006).

2.2 Willingness of different stakeholders to pursue standardisation of financial information flows

Different stakeholders, such as filers, receivers and consumers (users of the financial information) approach standardization initiatives differently. The willingness of companies to pursue standardisation of financial information flows may differ according to the type of company. Generally, firm size is a surrogate for an organization's overall resources and assets (Lee & Xia, 2006). Small companies have resources that are more constrained or they may possess fundamentally different sets of resources compared with their larger coun-

terparts (Darnall et al., 2010). For example, large companies tend to have several types of staff and are, therefore, more likely to have dedicated staff available for handling financial information flows. On the other hand, very small companies are unlikely to have the resources to prepare the annual accounts required by law in our European setting (Ojala et al., 2016). Moreover, micro-companies are typically managed by the owner, which often reduces the risks associated with the traditional agency problems of information asymmetry between management and investors (Ojala et al., 2016). With regard to the capital markets, the practices associated with the production and dissemination of financial information can be seen as a mechanism for reducing the cost of external capital. The stock market does seem to reward and punish firms' information production decisions (cf. Lambert et al., 2007). These arguments suggest that larger companies may consider the standardization of financial information flows more important than smaller companies.

The tax authorities may be particularly interested in improving financial data flows from companies due to the taxpayers' accountability to the tax authority. The tax authority is a quasi-shareholder of all companies, regardless of size. "The state, thanks to its tax claim on cash flows, is de facto the largest minority shareholder in almost all corporations" (Desai et al., 2007: 592). Unlike most minority shareholders, the government does not face free-rider problems in monitoring managers, and the monitoring of financial statements by tax authority is likely to discourage wealth diversion by managers (Desai et al., 2007). International Financial Reporting Standards are underpinned by a conceptual framework (IASB, 2015), which states that the objective of general purpose financial reporting is to provide information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions about providing resources to the

entity. Thus, providing useful information for decision makers, such as equity investors and contracting parties is a key principle (Hanlon & Heitzman, 2010). Advances in information technology through the use of SBR/XBRL offer opportunities for improving the collection and dissemination of financial and business information even more broadly in the public sector. Implementations of SBR/XBRL or XBRL in Netherlands, Austria, Singapore and UK seem to have improved of information transparency and efficiency in regulatory compliance (Chen, 2012; Robb et al., 2016).

Users of financial data, such as investors, analysts and creditors, typically welcome any initiatives related to standardization. Standardizing the data content in financial information flows, leveraging on the use of advanced information technologies to disseminate the data and increasing the transparency of the data through common data standards all aid the economic decisions made by users.

2.3 Conceptualizing SBR

SBR is a national standard for the digital exchange of business reports that allows information to be reused easily. It requires the development of a single set of definitions and language for the information reported by businesses to government (Madden, 2009). This allows joint tax and financial reporting through a common government gateway. Therefore, companies no longer need to prepare different financial reports for different government agencies. Figure 1 illustrates a pre-SBR situation where companies make multiple reports in different data formats to the same or different government agencies (OECD, 2009). It is loosely based on the UK where companies register and file their statutory reports and accounts at Companies House. Figure 2 illustrates the move to SBR with consolidated returns using standard data format. The use of the common government gateway means that it will no longer be necessary to re-enter data into different

systems or interpret terms for one agency that have a slightly different meaning for another (Madden, 2009).

The Netherlands was the first country to introduce SBR. Electronic tax filing for all companies and all taxes via a digital portal became mandatory in 2005. Since 2007 the Dutch taxonomy has allowed businesses to use XBRL to file reports directly from their software to the tax authority, statistics office and the chamber of commerce (Sinnott & Willis, 2009). The program also attracted interest from other Dutch agencies such as the pensions, healthcare and education authorities.¹ Subsequently, Australia, New Zealand, Singapore, Belgium, the UK and Finland have also developed their own SBR programs, building on the lessons learned from the Netherlands (OECD, 2009; 2010; Sinnott & Willis, 2009; Eierle et al., 2014; Lim & Perrin, 2014).

SBR offers a number of benefits to filers and government agencies. The benefits to filers are avoiding duplication of reports to several government agencies, thereby reducing administrative burdens. The benefits to government are the increase in the proportion of data received in electronic format, with fewer errors. The question then arises of how to set up such a program. Bharosa et al. (2011) studied the SBR implementation in the Netherlands and found seven key transformation principles: (1) Make SBR a by-product of the data already in the company's accounting systems, (2) Include controls for auditing in software, (3) Keep the business focus, (4) Position SBR as a cross-government policy initiative, (5) Stimulate private sector involvement, (6) Combine restrictive and flexible project management strategies, and (7) Underline the attention given to end-to-end security over the reporting chain. Hulstijn et al., (2011) also studied the Dutch SBR implementation and identified issues and dilemmas associated

¹ For further information, see <https://www.sbr-nl.nl/english-site/>

with the development schedule, process, data and technical infrastructure layers, as well as governance. While these principles offer a useful guide to stakeholders in increasing the general awareness of SBR and assist in setting up an SBR program, we noted a lack of studies addressing the specific task of developing the associated taxonomy. This provides the rationale for the present study which provides a more detailed analysis of the design principles associated with SBR taxonomy development.

3. Methodology

To improve our understanding of how SBR taxonomies are developed, we took an inductive approach when designing our longitudinal study of the Finnish SBR program. Contextual and other qualitative data were collected

from documents, observation and interviews, and interpreted using qualitative methods with a view to generating theory (Ketokivi & Choi, 2014). As this was an exploratory case study, we started with a general research focus on government reporting to improve our understanding on how national reporting infrastructures are created. We then focused our attention on the specific area of SBR taxonomy building. In accordance with the advice of Eisenhardt (1989) and Yin (2009), data collection and data analysis were interleaved in an iterative manner.

The involvement of two of the authors in the Finnish SBR program allowed us to gather unique empirical data. From the very start, these two researchers participated as facilitators and observers at the steering group meetings and at project meetings and work-

Figure 1. Pre-SBR position – multiple data format reporting

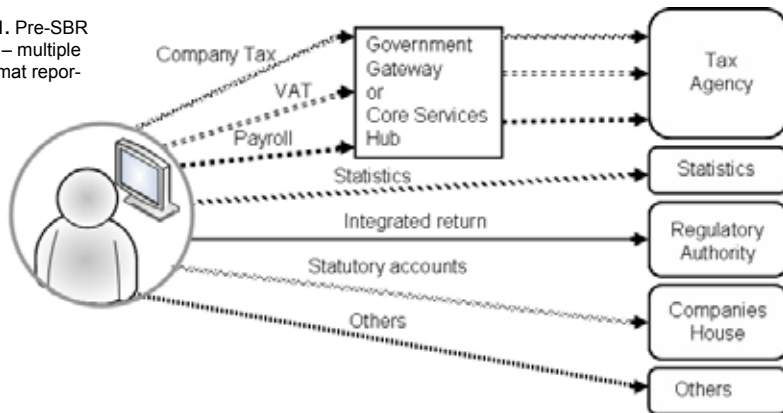
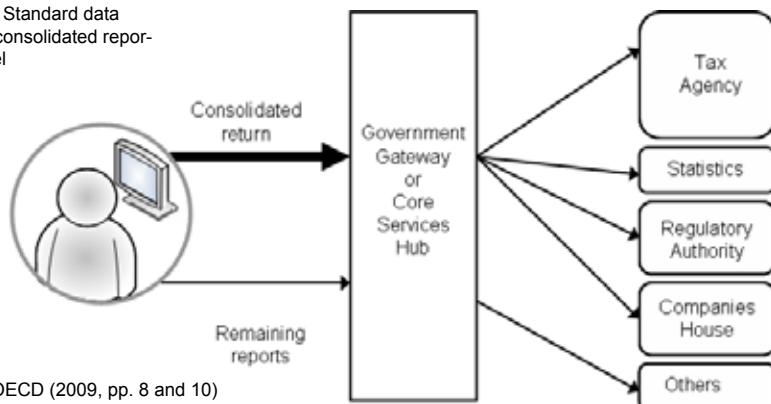


Figure 2. Standard data format – consolidated reporting model



Source: OECD (2009, pp. 8 and 10)

shops. In addition, they were commissioned to conduct interviews with key stakeholders and provide feedback to the project team. Although they were granted access to all project meetings and had opportunities to make comments and propositions throughout the project, our methods did not include aspects of interventionist, constructive or action research. Instead, we used multiple methods to collect data with a view to making inferences from our analysis of the resulting rich body of data.

The researchers had full access to the documentation of the SBR program. This included project plans, communication plans, funding plans, minutes of the meetings, professional and business press articles published on the program, and any material delivered to the program's financiers. By using multiple data sources, we were able to capture both rational criteria (from the documents, for example) and non-rational criteria (from our observations of the meetings and our interview data, for example). We were able to immerse ourselves in the data for a prolonged period of time, which allowed persistent observation of the subject under study. In addition, we received feedback on our interpretation of the data gathered. All these factors increase the credibility of the study and the validity of the findings (Collis & Hussey, 2014).

3.1 The interviews

The interviews were conducted in four stages between 2009 and 2015. Appendix 3 shows the timeline of the SBR program and the different stages in the research process.

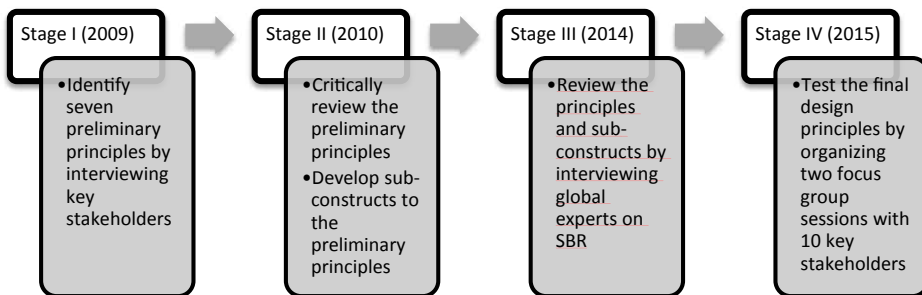
Stage I: In 2009, nine interviews were held in order to improve our understanding of financial reporting procedures relating to mandatory reporting to government agencies and other external stakeholders, which is the focus of SBR in Finland. Four of the interviews were held with experts in accounting firms; two with experts from accounting software vendors; and three with experts working for

operators transmitting mandatory financial data. Two of the authors analysed the interview transcripts using their knowledge of accounting information systems project management. In addition to holding a PhD in Accounting and Information Systems Science, the researchers had both held management positions related to information and accounting systems development spanning more than two decades. The thematic analysis of the interview transcripts identified seven preliminary concepts that play an important role in the success of a SBR initiative.

Stage II: The findings from the first-stage interviews were used as the basis for further interviews which were conducted in 2010. Two were held with members of the SBR steering group, and three with senior management representatives of the organizations involved in the SBR program. The purpose of the interviews was to critically review the preliminary constructs that had emerged during our analysis of the first-stage interviews and to improve understanding of the interplay between the preliminary constructs.

Stage III: To validate the design principles and related sub-constructs, we conducted four expert interviews in 2014 with global experts on SBR. The interviewees included the director general of the Dutch SBR program, a member of the board of XBRL International having experience from a number of SBR implementations from the Netherlands and Australia, an adviser to the Dutch SBR/XBRL program at the Netherlands Tax and Customs Administration, and a director at a service provider for an international SBR program.

Stage IV: To test the final set of design principles, we conducted two focus groups in 2015 with the key stakeholders of the Finnish SBR program. Each focus group included five people who had participated in the implementation of the SBR program. Both focus groups included participants from both public and private organizations.

Figure 3. Summary of main stages in the study

3.2 Data analysis

We used the critical success factors method (Daniel, 1961; Rockart, 1979) which was originally developed to align information technology planning with the strategic direction of an organization. Document review (project plans, communication plans, funding plans, minutes of the meetings, professional and business press articles published on the program, and any material delivered to the program's financiers) and the interview transcripts provided data for deriving an organization's critical success factors (Caralli, 2004, p. 45). Our analysis was aided by ATLAS.ti, which is a qualitative data analysis software used to systematically analyse complex phenomena in large amounts of textual data (Parker & Roffey, 1997). The software provides tools that help the user locate, code, and annotate findings as well as evaluate their importance and visualize complex relations between them. In order to increase the traceability of the data analysis, we used open, axial, and selective coding. The outcome of the analysis was a set of design principles that were perceived by the interviewees to be important in the development of an SBR taxonomy.

In Stages I and II, the interviews were semi-structured and lasted approximately one hour. The interviewees were asked broad questions and encouraged to provide examples to expand their views (see Appendi-

ces 1 and 2). The interviews were recorded, transcribed and sent to the interviewees for verification prior to analysis. We used data triangulation (Easterby-Smith et al., 2012) by collecting data from different sources: the interviews and the large set of notes and documents resulting from the researchers' participation in the SBR program meetings. This can reduce bias in data sources (Jick, 1979). In addition, the coding of the interview data was carried out independently by the two researchers participating in the program and the results were compared. A final strategy was to invite an experienced, independent researcher to code three interview transcripts. This yielded a match with our coding of more than 70%, which gives us greater confidence in the constructs.

In Stage III, we validated the set of design principles extracted in Stages I and II by presenting them to experts, who were asked to comment them and suggest modifications. This resulted in minor changes to the principles. For example, a principle 'Execution' consisting of 'Competent resources', 'Role-definition', and 'Timely delivery' was found confusing and after careful discussion was subsequently renamed 'Competence'.

In Stage IV, we tested the final set of principles in two focus group sessions. Each participant was asked to cite five factors that contributed to the success of the program. This

exercise produced a list of 50 items, which were documented by the researchers and discussed in the focus group. The 50 items were analysed by the researchers and mapped onto the design principles generated in Stages I-III.

4. Findings

The Finnish SBR program is a public-private collaboration initiative which started in 2009 with a view to decreasing the administrative burdens on reporting companies and increasing the efficiency of report receivers (see Appendix 3 which presents the timeline of the program). The SBR taxonomy development can be divided into two phases: content taxonomy development and technical taxonomy development. The content taxonomy development work (2009-2011) focused on common data elements and resulted in an Excel-based listing of accounts with links to government reporting forms. The technical taxonomy development work (2012-2015) focused on creating the XBRL taxonomy and building the infrastructure for receiving the reports.

The Finnish SBR program was publicly funded and involved a considerable amount of pro-bono work by private companies. The project was successful in bringing together the key organizations involved in government reporting at an early stage, largely due to the fact that it was developed under the Real-Time Economy (RTE) program. RTE is a national program with a track-record of successful development projects in the field of financial administration.

The Finnish SBR taxonomy development project was supervised by the Real-Time Economy Advisory Board, which comprised representatives of the Bank of Finland, the tax authority, the Ministry of Employment and the Economy, the Federation of Finnish Enterprises and other national institutions. The Advisory Board also benefitted from the participation of system integrators, the Association of Accountants, and representatives from Finland's leading business school. The SBR

program had a full-time project manager and a budget of approximately €1m per annum during 2009-2015 to allow subcontractors to develop solution mock-ups and conduct pilots and surveys.

The main objective of the Finnish SBR program was to develop a taxonomy for government reporting. 'Taxonomies have been in use in government for many years but with a fundamental limitation; there have usually been multiple taxonomies for the same area. So different Departments within a jurisdiction would typically have their own taxonomies meaning that there could be, and usually are, different definitions for the same data item in different departments. Indeed, definitions may even vary within departments' (OECD, 2009, p. 11). The scope of the Finnish SBR taxonomy included corporate tax returns, mandatory financial reporting and statistics reporting. Companies had to prepare many different government reports essentially containing the same content but in different formats. Moreover, the information was collected via different channels and technologies, which varied from manual or postal submission of paper forms to electronic submissions using web forms. To tackle these inefficiencies, the initial focus was the implementation of a common chart of accounts, following the approach taken in France and Spain. However, it quickly became evident during working group meetings that this would not be feasible in Finland due to the high cost of the changes that would be needed to companies' bookkeeping systems. Therefore, it was decided to focus on creating a taxonomy linked to existing charts of accounts.

Our inductive study identified seven design principles, which we discuss in detail in this section. Table 1 reports the average number of citations for each factor based on independent coding by two researchers in Stages I-II (untabulated).

4.1 Competence

Our analysis reveals that developing an SBR

Table 1. Summary of the findings

<i>Design principle</i>	<i>Sub-categories</i>	<i>Definition</i>	<i>Frequency (%)</i>		<i>Average frequency (%)</i>
			<i>Researcher</i>		
			<i>1</i>	<i>2</i>	
1. Competence	Competent resources Role-definition Timely delivery	Identifying competent resources to execute tasks and ensuring the timely delivery of validated outputs	23	28	25
2. Win-win-win vision	Benefit Vision	Articulating the benefits of the innovation and creating a vision to the relevant parties involved	20	20	20
3. Multi-channel communication	Internal and external communication Multi-channel use Access to professional press	Extensively sharing information about project progress and benefits both internally and externally using many channels of communication	14	20	17
4. Intelligent scope	Key customer Flexibility Boundary	Setting the boundaries of the project at an ambitious, yet achievable level	16	11	13
5. Expertise commitment	Expertise involvement Top management sponsorship Satisfaction from early success	Involving high-level project resources through a sponsorship of executive level of project organizations	14	9	12
6. Track record	Proven ability to deliver Existing platform Funding	Establishing credibility through successful past projects	8	7	8
7. Co-creation	Network Teamwork Integration of	Creating the deliverables in collaboration with a large network of experts from several organizations	5	5	5
TOTAL			100	100	100

taxonomy requires advanced skills in a wide variety of domains: business domain, IT domain and project management. In the business domain, there are three main areas of expertise: accounting regulation, financial data flow and business register expertise regarding statutory reporting and tax filing expertise. In both the content taxonomy work and the technical taxonomy work (see Appendix 3) in the SBR program, there were a large number of experts operating in the business domain. For example, the Finnish tax administration provided approximately 20 experts in the content taxonomy phase. In the IT domain, competent resources on XML-based data transmission and system integration were required and provided by the participant organisations. Although these IT competences were crucial to the technical taxonomy work, they were equally important to the content taxonomy work. The presence of experts with advanced XML skills seemed to facilitate the rapid execution of the program because ‘business people’ did not have to worry about the technical aspects. A competent and full-time project manager bridged the heterogeneous skills of other participants by converting the actions and plans into a commonly understandable artefact. This was often in the form an up-to-date Excel worksheet containing the current version of the taxonomy and planned actions. The project manager(s) also had to map the expertise needed to execute the program efficiently and define the roles and responsibilities of the people involved in the core of the program, as illustrated by these quotations.

“It’s important to have enough deep skills combined into the horizontal view [horizontal collaboration is collaboration across rather than along the supply chain].” (Director B, large publicly listed IT company)

“Execution and passion for execution feeds itself in this project. Roles and responsibilities have been divided efficiently.” (Executive, Tax Office)

“When you have this kind of large project, it needs to be cut into feasible parts and go phase by phase. The timely delivery of small concrete steps makes the participants feel that we are going somewhere.” (CEO, Association of Accounting Firms)

We have labelled the design principle with the highest level of occurrence *competence*, which has three components: *competent resources*, *role definition* and *timely delivery*. We define *competence* as identifying competent resources to execute tasks and ensuring the timely delivery of validated outputs.

This discussion leads to our first proposition:

P1: Competence (expertise in accounting and tax regulation, financial data flows and filing processes), is an important design principle in SBR taxonomy development.

4.2 Win-win-win vision

Three members of the project steering group made a significant contribution to the program’s vision: a former bank executive, the head of tax administration and the co-chairman of the association of external accountants.

The former bank executive had an impressive background in converting legacy processes into electronic ones. He had been in a leading role as a VP of a large Nordic bank in creating, as a pioneer in that field, the electronic banking system. He had also acted as the chairman of the EU-level committee that established electronic invoicing standard to EU. His vision was built on the existing important role of the banking system as a secure information platform and the key role of structured data when systems talk to each other.

The head of the tax administration had previously worked in the VAT section of tax administration and had been active in developing VAT processes into electronic ones. While head of the tax administration of Finland, she was very active in developing the

process and system landscapes and the vision. She also had a long history in serving as a steering group member in the association of external accountants, which had expanded her views on financial information flows of enterprises that submitted their tax returns.

The third person was both an owner of medium-sized accounting firm and co-chairman of the association of external accountants. She was active in innovating more efficient ways of working in the field of preparation of financial reports. She was active in challenging the vision of the other two and created depth in the vision of the SBR program through her expertise in the field of financial information preparation and financial process consultancy.

Each of the three members of the steering group had a comprehensive vision of what kind of standardized process and system architecture should be established in Finland. Their visions were largely overlapping and in the steering group meetings they were merged into one.

"I think the most important success factor is to have a vision - to have a strong vision and to be able to communicate and share it." (Director A, large publicly listed IT company)

"The project management must sell the vision and the potential benefits of the innovation to the stakeholders. That's the way to get their interest." (Director, bookkeeping software company)

The design principle with the second highest level of occurrence is labelled *win-win-win vision*, which has two components: *benefit* and *vision*. *Win-win-win vision* is defined as articulating the benefits of the innovation and creating a vision to the relevant parties involved. Successful innovation requires a clear articulation of a common vision and the firm expression of the strategic direction. Most of the interviewees stated that the vision and potential benefits of the innovation must be defined and communicated to each of the parties involved in the beginning of the pro-

gram.

This supports our second proposition:

P2: Win-win-win vision (for private companies, government agencies and funding institutions) is an important design principle in SBR taxonomy development.

4.3 Multi-channel communication

The role of the project manager was pivotal in the communication activities in both the content taxonomy and the technical taxonomy work. The project manager actively encouraged the key persons in all participating organizations to include SBR and XBRL in their main communication endeavours. As a result, SBR and XBRL were given visibility and stage-time in many events organized by the consortium member organizations. For example, the Association of the Finnish Accounting Firms holds two yearly fairs, a winter meeting and a summer meeting. Both these meetings gather over 1000 accounting professionals to hear about the latest developments in legislation and systems development related to accounting. Early on in the SBR program, the project team was given a stand and stage time at these fairs so that the accountants and the accounting information systems developers would familiarize themselves with SBR and XBRL. The SBR project team seized this opportunity and the chairperson of the Association of the Finnish Accounting Firms, the president of the Finnish Tax Office, and the SBR project manager gave numerous presentations discussing the opportunities of the Standard Business Reporting code set. The pinnacle of the technical taxonomy development work was the announcement of the national XBRL taxonomy in 2013 at the summer meeting of the Association of Finnish Accounting Firms. Similar events were organized by other parties, such as the Tax Office, university participants and system vendors.

In addition to the events such as seminars and fairs, the Real-Time Economy program put

a lot of effort into social media. The program had LinkedIn and Facebook profile pages, but also created a website of their own, called the Real-Time Economy Community. The website was used to collect and share information between a large number of individuals and organizations, in crowdsourcing fashion. The community obtained a national award for being the outstanding social media community. To facilitate the communication activities, the project team produced presentation material in the form of slideware, roll-ups, interview video material and an introductory video made by a professional advertising agency.

“Communication is very important. When the Tax Office makes modifications to its systems, it must communicate the changes to the users. The Tax Office should organize informative meetings for users of their systems.” (Accountant B, large accounting firm)

“Government organizations have to take a role in communication so that the Association of Accountants doesn’t have to take the entire communication burden [in the professional press]... Also, system integrators need to be involved in the communication.” (Accountant, small accounting firm)

“All project participants can’t participate in every meeting. It’s been very important to have a full-time project manager who has her eye on the ball, who shares information and takes broader role than being simply a mechanical project manager.” (Director, book-keeping software company)

Based on our observations in this longitudinal study, it is clear that communication played a key role in both the content and technical taxonomy development projects. Therefore, it was not surprising that in our interview data *multi-channel communication* was the design principle with the third highest level of occurrence. We conceptualize multi-channel communication through the components *internal and external communication, multi-channel use* and *access to professional and business press*. We define mul-

ti-channel communication as extensive sharing of information about progress and benefits both internally and externally using many channels of communication. The pivotal role of effective communication was identified in many of the interviews. This is not surprising, as large development projects require the involvement of participants from several organizations, which in turn requires efficient multi-channel communication.

The foregoing discussion leads to our third proposition:

P3: Multi-channel communication (within and between the professional accountancy bodies, tax administration and other governmental agencies, leading universities and system integrators) is an important design principle in SBR taxonomy development.

4.4 Intelligent scope

In early 2009, a researcher of the current study had various corridor and coffee break discussions with a senior lecturer who had participated in a Ministry-driven development project (hereinafter referred to as the old project) which had lot of similarities with the SBR program. The senior lecturer shared his opinion on why the old project had resulted in no implementation of the desired deliverables when it closed in 1999 and he also provided ideas that should be considered in the scoping of the current program. The senior lecturer explained that “everything else in the project was good, except that the project team was fixed in the idea that firms have to have a common chart of accounts”. The senior lecturer explained that the requirement of having a common chart of accounts was perceived as a show stopper in companies because it was perceived as a too heavy a burden to start making changes in “the foundation” of reporting system of all companies. In his opinion in the current program this should be avoided

and instead of common chart of accounts the current program should scope the current program to start from a common reporting taxonomy, that is, all individual companies could easily implement the new process by simply mapping the new taxonomy without changes in their chart of accounts. The senior lecturer further explained that as time goes by, the reporting taxonomy that would be laid out would gradually become a common chart of accounts automatically because new companies would be likely to adopt that as their chart of accounts.

The old project had prepared a 110-page memorandum entitled *Electronic Financial Statements* in 1999, which the senior lecturer handed over to the current program team. In addition to the idea of focusing on a reporting taxonomy instead of chart of accounts, the memorandum gave another important insight. The memorandum included a figure that visualized the reporting requirements of individual companies by showing the requirements to different government agencies in different columns. This raised an idea in discussions with the senior lecturer that the easiest way to establish the taxonomy of items to be reported to various governmental agencies was to use an Excel worksheet. The discussions led to the idea of having an Excel worksheet where all the participants would “own” one column that they would update annually. This was communicated to the SBR program team and became an important element of the scope of the project.

“I see that it’s important that the SBR uses the existing chart of account structures, making it easier to adopt by accountants and other experts in the field of financial administration. The SBR is very intuitive and the structure seems logical.” (Accountant A, large accounting firm)

“The project decided to market the innovation as a reporting taxonomy instead of a new chart of accounts. In Finland, people react emotionally to changes in the chart of

accounts and we felt that it would be better to market the idea as a SBR.” (Accountant B, large accounting firm)

“Normally stakeholders are not all equally important, rather there are some leaders. It’s a kind of success to get some kind of significant participation from them.” (Director A, large publicly listed IT company)

“The Tax Office is the key organization as they are the main report receivers; another key customer is the Business Register.” (Accountant A, large accounting firm)

We have labelled the design principle with the fourth highest level of occurrence *intelligent scope*. This construct has three components: *boundary*, *flexibility* and *defining the key customer*. We define *intelligent scope* as setting the boundaries of the program at an ambitious yet achievable level. It was evident from the interviews that while it is important to focus on something that is manageable and does not require too drastic a change in current practice, it is also important to work on a program that is large enough to have an impact and get people interested in the project. In other words, setting the boundaries of the program is crucial.

This discussion supports our fourth proposition:

P4: Intelligent scope (setting the report as the boundary object) is an important design principle in SBR taxonomy development

4.5 Expertise commitment

The association of external accountants took a key role in the program. It seems likely that one of the main reasons was that they considered their association was the right ‘home base’ for the development of the SBR in Finland. Not only was the co-chairman of the association active in the program, but the managing director of the association and the director of development contributed their time throughout the project. They clearly wanted to guarantee the success of a program

they considered was important to the whole profession of external accountants. In the steering group and other program meetings they explained that the profession was ageing. The transactional work in accounting was not perceived as appealing to university graduates and that it was in the interest of the profession to make sure that routine work that did not add value had to be converted into consultancy type work, where the accountants would have a dual role: as the preparer of financial information and as a business advisor or partner to management.

The previous bank executive was working as an executive in one of the leading European system integration companies at the time of the program. He helped gain access to relevant expertise in concept development and software coding of XML in particular. In addition, the director of R&D of the leading booking software firm continuously participated in the concept validation of the program.

“We are a small organization and we need to evaluate the projects in which we participate carefully. Allocating resources is, therefore, an important decision for us... Certain individuals from the Real-Time Economy program created enthusiasm and we perceived that as important.” (CEO, Association of Accounting Firms)

“True commitment to the project is crucial because then people are motivated to really prepare material for the meetings. Often there are people who participate merely because it’s advantageous to their career, but in such cases they don’t contribute to the project and they disappear when problems arise.” (Director, bookkeeping software company)

“The key is that one can start with smaller scope things, so that everyone can see what the target and benefits are, and then gradually enhance the solution and the participation of the different stakeholders. Soon they feel the outcome is something that includes their contributions and that they have helped

create the results... There’s commitment and motivation to promote it further.” (Director A, large publicly listed IT company)

The design principle with the fifth highest level of occurrence is labelled *expertise commitment*, which encompasses *top management sponsorship, expertise involvement and satisfaction of early success*. The construct, *expertise commitment*, is defined as involving high-level human resources through the sponsorship of executive-level project organizations. Getting commitment from all parties involved was perceived to be a key design principle by the interviewees. Typically, in development programs involving private/public collaboration, participants from many organizations are involved and they often participate on a voluntary basis. Getting the participants committed to the SBR program was important because there are usually no formal methods of governance that can be used.

This discussion leads to our fifth proposition:

P5: Expertise commitment (from the professional accountancy bodies, government agencies and system integrators) is an important design principle in SBR taxonomy development.

4.6 Track record

Both the content taxonomy (2009 start) and the technical taxonomy (2012 start) development projects were initiated by a private/public development program, the Real-Time Economy program which started in 2007. The focus of the Real-Time Economy Program was on streamlining financial processes such as the purchase to pay and the order to cash cycles. The program had worked on e-invoicing, for example, and had successfully delivered concrete tools such as the e-accounting reference. So, prior to the start of the content taxonomy development work in 2009, the Real-Time Economy program had already created a network of enthusiastic people from various organizations working on finan-

cial process development. Therefore, it was relatively easy to start building the network of organizations for the content taxonomy development project. Relying on a neutral, pre-existing platform with funding and a track record of successful program development was seen as an important means of mitigating the risks associated with initiatives that require the concerted effort of both private and public constituencies.

In order to ensure funding for the SBR program, the project team prepared two extensive project plans which were used in successful bids for funding from the Finnish Funding Agency for Technology and Innovation. The funding requests included predefined spending areas of the program, which were subsequently followed up by the project manager and the steering group in the program meetings.

“We felt it was important to have the Real-Time Economy program, leveraging from earlier projects of Full SEPA [Single Euro Payments Area], FVC [Full Value Chain], and FIA [Fully Integrated Accounting].” (Director B, large publicly listed IT company)

“SEPA was one kind of trigger in the beginning and electronic invoicing, and then it is an issue of how to build on success, how to build on existing practices and so forth.” (Director A, large publicly listed IT company)

“It was important to us that the people involved in the program were credible and had a strong background in similar development projects. It made us take the program more seriously.” (CEO, Association of Accounting Firms)

The penultimate design principle identified, with the sixth highest level of occurrence, is labelled *track record*. This construct has three components: *proven ability to deliver*, *existing platform* and *access to funding*. We define *track record* as credibility through previous successful programs. We found that having a track record was particularly important in the early stages of the program as it was easier to

get the various parties involved. Being part of something bigger and leveraging the past accomplishments were seen as ways of enhancing the credibility of the program and avoiding being overly reliant on one or two people.

This above discussion supports our sixth proposition:

P6: Track record (previous successful development projects in the Real-Time Economy program) is an important design principle in SBR taxonomy development.

4.7 Co-creation

In making the content taxonomy in 2009-2010, the project team employed a work mode in which the project manager produced a new version of the SBR code set to be presented in the bi-weekly meetings. The SBR code set was produced in Excel, listing the relevant data to be transmitted in SBR. The Excel contained accounts with metadata and mappings to different government reports such as tax filing forms. Between the meetings, the project manager ensured that the parties (namely the three report receiving organizations: the business register, the tax authority and the national statistics office) worked individually on the content taxonomy adding and refining the SBR code set. To facilitate the establishment and refinement of the SBR code set, each organization was given a column in the Excel worksheet for which they were responsible. This practice ensured that no unnecessary accounts were added to the taxonomy. The same practice of bi-weekly meetings was employed in the making of the technical XBRL taxonomy in 2012-2015.

In the bi-weekly program meetings, the modifications were discussed collectively. In addition to the representatives of the government agencies, the group included experts in the relevant business and technology domains. Software providers, auditors, accountants, and researchers participated actively to the discussion ensuring that their views were

taken into consideration. Here, the role of the project manager can be described as demanding as she had to cater to the various views of the different stakeholder groups. There were opposing views on, for example, the extent of accounts to be included in the content SBR taxonomy and the technical choices of the technical XBRL taxonomy.

“[To be successful] you need to have a critical mass of participants, enough people to be convincing and interesting.” (Director, book-keeping software company)

“The first step is to get the critical organizations and people on-board. If some important organizations are missing then they might throw a spanner in the works and prevent the program from going forward.” (CEO, Association of Accounting Firms)

“You have to get a lot of people involved – players, regulators and researchers – and you can go a little bit further... and include education, which grabs what you are creating so that even the young people who are studying these things engage with it.” (Director A, large publicly listed IT company)

“Combining the efforts of business and academia; credibility aspect and education aspect.” (Director A, large publicly listed IT company)

“The networking aspect is one thing that follows from the common vision... [You need] to develop the markets gradually from the vision and create the network that will deliver the solution, the innovation and the ideas. You cannot do these things alone.” (Director A, large publicly listed IT company)

Based on these observations and the coding of the interview data, the final design principle identified is labelled co-creation and this construct has three components: network, teamwork, and integration of resources. Based on the interview data, we define co-creation as creating the deliverables in collaboration with a large network of experts from several organizations. The involvement

of a network of organizations and working together was considered to be important to the success of the program. The foregoing discussion leads to our final proposition:

P7: Co-creation (practices allowing coordination of shared efforts of experts from several organizations) is an important design principle in SBR taxonomy development.

5. Discussion and conclusions

5.1 Theoretical implications

In this section, we discuss the theoretical implications of our findings on three fronts: *alignment of interests*, *penguin problem*, and *scoping*.

First, prior literature on standards development points out the divergence in the interests of the vendors and the users of the standard (Foray, 1994), thus highlighting the importance of pursuing standards development as a collective action (Kindleberger, 1983; Weiss & Cargill, 1992). Our findings support this view, as many of the design principles we identified were tangential to the notion of collective action. *Aligning the interests* of the various parties through co-creation, creating a win-win-win vision for the divergent parties, and committing expertise from them were all identified as important design principles by the participants of the SBR project. Therefore, we theorize that a necessary prerequisite for standard development in SBR is the effective alignment of interests of private and public constituencies, and that this can be achieved through the seven design principles we identified.

Second, standard development often suffers from prisoner’s dilemma (Foray, 1994), where no one has the incentive to contribute to the development of the standard because those who have not contributed cannot be excluded from enjoying the results (Markus et al., 2006). This leads to the so-called *penguin problem* (Farrell & Saloner, 1987) where

nobody dares to be the first mover. Based on our findings, we theorize that this situation can be addressed by focusing on providing a clear vision, backed by a credible track record of successful projects, which, in turn, enables the parties to commit resources to the development project.

Third, in addition to the traditional success factors associated with project management (such as communication, competence, and commitment), *intelligent scoping* of the artefact in the SBR taxonomy development project emerged as an important design principle. Out of the seven design principles identified by our study, this seems to be the most contextual features to SBR development, reflecting the inherent traits of the SBR initiative.

5.2 Practical implications

While previous research (Bharosa et al., 2011; Hulstijn et al., 2011) offers guidelines on how to successfully implement SBR programs overall, our study focuses on the specific phase of taxonomy development in the SBR program. Due to the nature of SBR, which requires the concerted efforts of several government agencies as well as private organizations, our design principles highlight the co-creation aspects of the standard development. Therefore, we recommend any jurisdiction considering embarking on a similar SBR journey to ensure that all the relevant government bodies and private sector institutions are committed to the program and that they are willing to create a taxonomy following the guidelines of service co-creation. Being able to draw on a national development program (in our case, the Real-Time Economy program) helps. Another enabler for this concerted co-creation of the taxonomy is the careful vision of the SBR program and intelligent scoping of the taxonomy. Therefore, in the initial stages of the SBR program, we recommend investing time and resources to working on issues related to strategy and vision, as well as defining the scope of the program.

The role of the project manager emerged as an important issue in our study. The project manager was seen as a critical resource in persuading the different parties to commit to the project; assisting with the co-creation of the taxonomy; ensuring the smooth iterative development work on the taxonomy; and communicating the quick wins in the project. Our findings suggest that time spent on recruiting a suitable SBR project manager pays off in the taxonomy development work.

However, the foremost design principle we identified turned out to be competence. Development of an SBR taxonomy requires deep skills in a number of areas spanning from accounting and statutory reporting to system interfaces and technical taxonomy work. We interpret this design principle as a fundamental factor that must be in place for the project to proceed. Therefore, we recommend any jurisdiction considering SBR to widely seek members of the project team with competencies on all these fronts and try to get them committed to the program as soon as possible.

Benefits in the access to finance through the use of SBR (and XBRL) are likely to be based on experiences in the Netherlands, where there has been a similar SBR (and subsequent XBRL) implementation. In the Netherlands, the Financial Reporting Cooperative (a partnership of the three major commercial banks) has launched an information campaign encouraging firms to begin using SBR now. The Cooperative provides the infrastructure for enterprises to either file directly or through their accounting or audit firms, as well as a dedicated helpdesk and other support to aid in the transition to SBR (XBRL, 2017).

5.3 Limitations of the study

Although the Finnish SBR program provides a valuable case study resulting in knowledge that can be transferred to similar initiatives in other jurisdictions, we acknowledge that our study focuses on a single case. Further

research in other countries could be conducted to critically review our theoretical model of the seven design principles. Although we collected and analysed a rich data set derived from interviews with key

stakeholders, project material and observations, further research could be conducted to investigate the causal links between the design principles and develop hypotheses for statistical testing.

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Appendix 1: Interviewees

ORGANIZATION	DESCRIPTION	DATE
Small accounting company	Accountant	12.10.09
Bookkeeping software company	Accounting software vendor A	23.10.09
Bookkeeping software company	Accounting software vendor B	23.10.09
Mid-tier audit company	Auditor	26.10.09
Large publicly listed IT company	Specialist in data transmission A	27.10.09
Large publicly listed IT company	Specialist in data transmission B	27.10.09
Large accounting company	Accountant A	03.11.09
Large accounting company	Accountant B	03.11.09
Large publicly listed IT company	Specialist in data transmission A	04.11.09
Large publicly listed IT company	Specialist in data transmission B	04.11.09
Large accounting company	Accountant A	06.11.09
Large accounting company	Accountant B	06.11.09
Small accounting company	Accountant	10.11.09
Mid-tier audit company	Auditor	13.11.09
Large publicly listed IT company	Director A	29.04.10
Large publicly listed IT company	Director B	30.04.10
Bookkeeping software company	Director	26.08.10
Tax Office	Executive	05.11.10
Association of Finnish Accounting Firms	CEO	12.11.10
Dutch SBR program	Director	16.6.2014
XBRL international	Board member	26.1.2015
Dutch National IT Office	Director	28.1.2015
Dutch tax office	Director	28.1.2015
Focus group interviews	Various participants	24.4.2015

Appendix 2: Interview Guides

Stage 1 Interviews (2009)

Interviewee's background

What is your overall perception of the SBR development work?

What are the pros and cons of the SBR program in your opinion?

Who are the most important users of the statutory reports in your opinion, why?

Would it make sense to try to integrate statutory reports, why?

Who should be involved in the creation of SBR?

Who should own and maintain the SBR concept once it has been completed?

Do you have ideas of the technical aspects of information delivery, after the SBR has been completed?

Do you have anything to add that you consider relevant to the development of the SBR?

Stage 2 Interviews (2010)

Interviewee's background

Education, work experience

Prior experience in development projects

What are the general design principles of development projects?

What were the design principles in the Standard Business Reporting program?

Appendix 3:

Timeline of the Finnish SBR program and stages in data collection

