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Data Balance Sheet in OP Financial Group

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Abstract

We use a qualitative case study research approach in Finland's largest financial services group to explore the design and use of a data balance sheet—a new and innovative form of corporate voluntary disclosure reporting. Data has become a key element for the banking industry as digitalization has created totally new business models and revolutionized traditional operating practices. In this study, we explore how OP Financial Group uses a data balance sheet to illustrate the importance of data in strategic management as well as its responsible processing and utilization. We analyze the use of the data balance sheet by the applying the lens of data monetization literature. Our findings reveal that all four main steps of data value chain—data generation, collection, analysis, and exchange—were clearly observable in OP Financial Group's Data Balance Sheet model. In addition, we observed several routes of data monetization, including building high analytical capability based on mathematical and business analytical knowledge, creating high technical data infrastructure, and applying predictive and statistical analysis. We argue that the exploitation of the data balance sheet approach will increase in the future, especially among data-intensive companies in the finance and banking industries. Data management will be one of the most important components alongside environmental, social, and governance reporting as owners, customers, and other stakeholders are increasingly requiring more transparency about value creation and the responsible use of data and artificial intelligence. This development calls for further research on data measurement and disclosure.

Keywords: data balance sheet, cooperative banking, data monetization, digitalization, data analytics

1. Introduction

Digitalization is one of the megatrends of our time, having deep effects on businesses and societies (Hajkowicz, 2015; Parkins, 2018). The digital revolution challenges traditional business models, including those of the banking industry. The new wave of digitalization—like big data, machine learning, and autonomous algorithms—will disrupt the ways of working in contemporary organizations (Shrestha et al., 2019). Due to rapid digitalization, financial institutions have invested increasingly in developing their mobile financial service offerings (Shaikh, Hanafizadeh, & Karjaluo, 2017). The financial sector is under a rapid transformation process in which the digital service development is leading to new ways of interacting with clientele (Sajasalo et al., 2019).

This technological development has also changed customer behavior, leading to a transformation of the banking industry. Customers are increasingly demanding personal, fast, and high-quality services and solutions that are available 24/7. Customers do not accept time and place restrictions and digitalization has become crucial to overcome these restrictions (Sachse, Alt, & Puschmann, 2012; Setia, Venkatesh, & Joglekar, 2013). Intensive use of digital service channels and a decrease in physical branch visits have forced many banks to change their business models toward hybrid customer interaction (Nüesch, Alt, & Puschmann, 2015).

In the banking sector, the trend of digitalization is especially visible in Scandinavian countries. Norway, Iceland, Denmark, and Finland have online banking penetration rates at 95%, 94%, 91%, and 91%, respectively (Statista, 2020). Banks, specifically in Nordic countries, have experienced a shift from traditional, interpersonal forms of service to digitalized financial services. These technological advancements have changed the traditional business models and become increasingly crucial in today's digitalized value creation, providing banks with several new

opportunities and challenges on which to capitalize (Niemand, Coen Rigtering, Kallmünzer, Kraus, & Maalaoui, 2020).

In addition, traditional banks are facing increasing pressure to modify their business models because of emerging concepts like cryptocurrency, crowdfunding, and direct banks (see Bouncken, Komorek, & Kraus, 2015; Richter, Kraus, & Bouncken, 2015), especially in countries with a long banking tradition (e.g., Switzerland). Similarly, the possibilities of blockchain technologies (Saberi, Kouhizadeh, Sarkis, & Shen, 2018), sharing-economy services (Richter, Kraus, Brem, Durst, & Giselbrecht, 2017; Uzunca, Coen Rigtering, & Ozcan, 2018), and network competition (Alt, Eckert, & Puschmann, 2015) have been mentioned in previous research as possible factors shaping the work and business models in the banking industry.

At the same time, the value of information assets has never been greater. The amount of data is increasing extremely fast: 90% of all data has been produced in just the last two years (the world produces 2.5 quintillion bytes a day). According to the European Commission, by 2020 the value of personalized data, which is only one class of data, will be one trillion euros, almost 8% of the European Union's gross domestic product (World Economic Forum, 2017). To stay competitive, organizations are increasingly looking for new ways to create value, whether using their own or someone else's data. This increase in the amount and importance of data and the use of artificial intelligence (AI) has strong effects in the data-intensive banking and insurance sectors. Competition has increasingly become a new player and service models are continuously entering the financial market. To stay ahead in the increasing competition, banks are facing new requirements to prioritize technological advancement with investments in AI applications to create value with better customer services, to improve operating performance, and to increase revenue. The development of fintech and AI applications will prominently shape the future of the financial

sector, opening up new business opportunities, challenges, and increased competition among industry leaders. Analyzing, governing, and exploiting data has always been in the core of the financial industry, while AI provides even more tempting opportunities.

Lastly, the requirements for transparency in the banking sector are increasing as customers are more concerned about data security, data protection, the use of their personal data, and ethical principles of AI exploitation. Violations of customer trust related to the use and protection of personal data can cause serious damage to customer relations and the company brand. In the age of information technology, a lone violation can be severe enough to effectively eliminate all trust (Lewicki & Bunker, 1996). Public trust in the financial service industry is already at its lowest level because of the prolonged period of various banking scandals and the global financial crisis. Banks need to work hard to minimize reputational and operational risks by significantly reducing the chances of any major information technology defects (Ahmed, Bangassa, & Akbar, 2020).

Even if recent research findings suggest that retail banks have started to improve transparency in their business operations by appropriately disclosing the key features of their lending and other banking activities (see Ahmed et al., 2020), use of a data balance sheet has not yet reached established status in the banking sector or other data-intensive industries. In addition, despite the increasing importance of data for business operations, many companies might not manage it strategically.

To our knowledge, no other bank has made a similar efforts and investments to increase the transparency of data to stakeholders by disclosing information about its use of data to implement its strategy and key principles and practices governing responsible and safe exploitation and processing of data. Despite this fact, data assets are the engine driving the total value and growth of modern organizations (Hagiu & Wright, 2020). As a result, organizations are facing

challenges to create a framework to discover and realize the potential of their data, to increase and to disclose the value provided to shareholders, and to guarantee the future success of the organization. A data balance sheet is not only a tool for strategic management of data. The process of creating the report forces organizations to focus on these critical aspects of data as drivers of value creation.

In terms of customer volume, OP Financial Group is Finland's largest company in the financial sector (Bank of Finland, 2020); it uses and produces massive amounts of data. Data is one of the most important assets for the case organization, and it needs to be managed efficiently to ensure it is used accurately and productively. In this article, we conduct a qualitative case study on Finland's largest financial services group to explore the design and use of a data balance sheet—a new and innovative form of corporate voluntary disclosure reporting. In the following sections, we describe why and how the case organization uses a data balance sheet to report and explain to the stakeholders the enrichment and utilization of its data to create value for customers, increase the efficiency and security of its operations, and to produce the best analytical understanding to support organizational decision-making. Moreover, we briefly analyze the case through the lens of data monetization literature.

This case study example can help other organizations better understand the value of data and encourage other data-intensive companies to increase their disclosure reporting in this field. This study provides a comprehensive presentation of the case organization's efforts to understand, develop, manage, and communicate how to create value from data. Indeed, as Sameli Mäenpää, the Senior Vice President and Chief Data Officer (CDO) of OP Financial Group, stated: “The future winners are those who can use data better than others in terms of productivity, security and responsibility” (OP Financial Group Data Balance Sheet 2019, p. 6).

The article is organized as follows. In Section 1, we introduce the study, provide our motivation, and present the purpose and research questions. In section 2, we provide some previous literature as the background for the study. In Section 3 we present our research methodology and introduce the subject company and cooperative organizations. We present empirical findings in Section 4. In Section 5, we discuss the findings and present our conclusions.

2. Theoretical Background

The purpose of a data balance sheet could be approached from at least three different perspectives. First, we can think of it as data measurement, valuation, and commercialization—collectively, “data monetization.” A second theoretical approach might be as a form of strategic performance measurement system: a specialized scorecard-type measurement framework. The third approach might be as a special type of responsibility reporting. While all of these approaches merit further consideration, we focus on the first one, data monetization, in our study.

Within digitization, traditional value chain models may become outdated, as they do not consider data as a main source of value. Thus, scholars have developed new value chain models, called data value chains (DVCs), to carry out measurement in data-driven organizations. A DVC is a set of repeatable processes to extract the value of data step by step throughout its entire lifecycle from raw data to veritable insights. A DVC consists of four main steps: data generation, data collection, data analysis, and data exchange (internally or externally with partners; Faroukhi et al., 2020).

New DVCs like big data value chain (BDVC) have emerged with the increase in big data to face new data-related challenges like high volume, velocity, and variety. DVCs describe the data flow within organizations that rely on big data to extract valuable insights. By using data analytics tools, the steps from data generation to knowledge creation become apparent. Using

processes for aggregation and exploitation of data have given rise to what is called data monetization. It consists of using data to generate profit by selling the data directly for cash or relying on data to create value indirectly. Thus, different approaches that enable data monetization throughout DVCs have been introduced (Faroukhi et al., 2020).

Miller and Mork (2013) defined BDVC as a framework to manage data exhaustively, from capture to decision-making, and to support a variety of stakeholders and also their technologies. BDVC consists of five distinct stages: data acquisition, pre-processing, storage, analysis, and visualization (Faroukhi et al., 2020). BDVC can generate great benefits because, once data is generated, it can be mined multiple times and for different needs (McAfee & Brynjolfsson, 2012). Data can also be exploited by others in its different forms or built upon and exploited many times over. Thus, an increasing number of organizations are claiming to monetize their data as exchangeable or saleable services (Faroukhi et al., 2020).

Gomez-Arias and Genin (2009) highlighted six routes to monetize social networks, including side payments, buy-clubs and affiliate programs, access controls, aggregation rules, and integrated mobile platforms. Moreover, they found that in harnessing the value of social networks, customer interaction increases brand loyalty and improves customer feedback, and knowledge management facilitates interaction between employees. In their study of the retail industry, Najjar and Kettinger (2013) explored ways firms can advance data: building high analytical capability based on mathematical and business analytical knowledge and building high technical data infrastructure by considering the aspects of hardware, software, and networks. The literature also highlights factors like the importance of sharing data with suppliers (Faroukhi et al., 2020) and applying predictive and statistical analysis (Bradlow et al., 2017).

Faroukhi et al. (2020) stated that creating business models for monetizing big data can be articulated around the following main pillars: (a) data extracted from customers' activities, which could be in its raw format; (b) data providers that collect and sell primary and secondary data; (c) data aggregators that provide customers with aggregated services; and (d) technical platforms, based on infrastructure, analysis, computing, and cloud capabilities enabling processing, consuming, and sharing data.

Finally, Alfaro et al. (2019) studied data monetization in global financial groups, identifying its direct benefits as selling information solutions to external customers, improving core business operations, applying analytical processing to guide product management, and providing the benefits of data monetization-based projects. According to Alfaro et al. (2019), the benefits that were gained were based on capabilities in data science, the acquisition of information technology (IT) infrastructures, analytical capabilities, talents, and skilled jobs.

3. Research Methodology and Case Description

We employ a qualitative case study approach (Ahrens & Dent, 1998; Vaivio, 2008). Because the purpose of the study is to illustrate a novel managerial practice in a contemporary context, the study could also be called an illustrative case study (Scapens, 1990; see also Lukka, 2005). The empirical data for our study was collected in the fall of 2020 by semi-structured, themed interviews, with the key themes being the meaning, content, role, and future of the data balance sheet disclosure, as well as the motivation for its use, the development process, and the key learnings of the development project and the model. The interview data consist of five themed interviews: four of these interviews were with the key players of the development project and the fifth interview was with a customer of the information. We also collected data from a variety of

other sources, such as internal documents and public documents in web pages, including the case organization's actual data balance sheets disclosed in 2018 and 2019.

We utilized content analysis for analyzing the empirical data. In Section 4, we present some selected excerpts from the interviews to illustrate the data and validate our conclusions. There were four researchers in our team involved with analyzing the data and as described above, there were different types of data. Thus, we followed researcher and data triangulation in our study.

Case Organization

Our case organization is OP Financial Group. We selected this organization because of its innovative data balance sheet disclosure, cooperative bank model, and digitalization context. OP Financial Group is the largest financial organization in Finland. It can be described with the following key information. OP Financial Group is a cooperative bank that employs over 12,000 people, and its balance sheet equals about €188 billion. The net profit of OP Financial Group is €838 million (OP Financial Group, 2019). For example, the 2020 market share of Finnish housing loans held by OP Financial Group is 39.1% (Bank of Finland, 2020). OP Financial Group is composed of 147 independent cooperative banks, 16 regional OP Financial Group alliances, and two million owner-customers (there are 5.5 million inhabitants in Finland; OP Financial Group, 2019). To understand OP Financial Group is to recognize that it is based on cooperative activities and joint success. Its main objective is not to maximize profit to the owners but to provide services to the cooperative's members and customers as comfortably and efficiently as possible. OP Financial Group states that its mission is to promote the sustainable prosperity, security, and wellbeing of their owner-customers and operating region (OP Financial Group, 2019).

Cooperative banks are one of the leading types of alternatives in the banking industry. In addition to the role of owner-customers, a characteristic of cooperative banks is the lack of external

investors (Holmström, 1999; Tuominen et al., 2009). Communalism and equality are also key characteristics of cooperative activity, and the administration of the cooperatives is based on the members participating democratically in the management on boards and in cooperative meetings. Members who utilize the products or services of the cooperative also own and manage them by applying a “one member, one vote” principle; thus, decision-making is typically relatively fragmented (Jussila et al., 2007). Cooperative organizations have a dual nature. They must operate efficiently and competitively in the market to provide economic benefits to their members; at the same time, they are also value-based, democratically controlled communities that serve the needs of their members (Troberg, 2014).

4. Data Balance Sheet in OP Financial Group

The Model

The concept of a data balance sheet has not yet reached established status in the business world. Even though data is growing in importance for business operations, few companies manage it strategically as a factor with diverse impacts on the core of their business. The CDO of OP Financial Group stated:

If you consider Facebook—e.g., which is a data capital about two billion people. Probably 99 per cent out of the value of 700 billion is based on this data capital. If ... it can't use the customer data for commercial purposes... the value of Facebook will be next to nothing, it will drop dramatically.

OP Financial Group's Data Balance Sheet, the focus of our study, seeks to address this specific challenge. It discloses how OP Financial Group uses data to implement its strategy and, through this, improve its business, customer experience, and risk management. It also presents the nature of data assets and data capital held by OP Financial Group, and objectives for their

development (see OP Financial Group Data Balance Sheet, 2019). The first data balance sheet report was disclosed for the year 2018 and the second report for 2019. The 2019 report includes 44 pages. The report consists of seven sections: Introduction, Customer and Data, Data Balance Sheet, Data Governance, People and Competencies, Protection and, finally, Key Figures and Ratios. As Timo Ritakallio, the President and Group CEO, stated, “The purpose of this Data Balance Sheet is to provide a comprehensive presentation of our efforts and encourage other companies to increase their reporting in this field” (OP Group Data Balance Sheet, 2019, p. 5). Furthermore, the CDO shared in the interview the following comment, “I often say that data and data capital, it does not have any value by itself. It has value only in the stage where it could be connected with some value generating process. [...] A process including a customer.”

OP Financial Group’s Data Balance Sheet describes the responsible governance, utilization and management of data. It describes the content of and interrelations between OP’s data capital and data assets produced by using this data capital. The model describes both sides separately and elaborates on the management, business, and risk management processes between the two sides of the balance sheet. The model combines the management of data in the data capital side with data, which is located on the data assets side (OP Financial Group Data Balance Sheet, 2019).

[Figure 1. The Structure of a Data Balance Sheet]

Data capital includes all data held by an organization. The amount, quality, and usability of data increase the value of data capital in the data balance sheet. Data governance and continuous quality improvement is located to the data capital side. As illustrated in Figure 1, data forms part of the equity and, in some cases, part of the liabilities, on which it seeks return, and the value of which it hedges against risks. The value of data capital is based on its business usability, efficient risk management, and its productivity in financial business. Data capital management focuses on

processes related to the amount, quality, and usability of data and risk management. Data capital includes intangible human knowledge capital, material data capital, and data-related operating models. Examples of material data capital include customer, product, financial, and market data. Operating models comprise processes for data protection and data correction (OP Financial Group Data Balance Sheet, 2019). Indeed, as the interviewed VP, Artificial Intelligence, said, “Data capital is the cumulative amount of data and data asset is what we have been able to ‘cook’ out of this capital.”

Data assets represent the exploitation of data capital to create value through data-intensive digital services. Data assets describe the use of data, such as generating business benefits, efficiency, or customer value added and, ultimately, generating financial return on the invested data capital. They describe the development and production of data-intensive services, processes, and architectures to generate business benefits and customers experience benefits. Business benefits may include generating entirely new revenue or increasing the sale or profitability of existing products and services. Data asset management is considered highly business- and customer-driven. Its returns are increased by the high quality of data capital and capabilities in development, analytics, business and customer understanding, the use of financial intelligence, improved decision-making, and service design based on customer understanding (OP Financial Group Data Balance Sheet, 2019).

As illustrated in Figure 2, the two sides of the data balance sheet are combined in the processes of data utilization, risk management, and balanced management. As in a financial balance sheet, the aim is to achieve a balanced position, that is, data assets and data capital generate new value in a reciprocal and balanced manner. It is supported by risk management processes. Key

risks are related to data protection and cybersecurity as well as business and technological risks (OP Financial Group Data Balance Sheet, 2019).

[Figure 2. Data Balance Sheet of OP Financial Group]

Key Performance Indicators

OP Financial Group's Data Balance Sheet includes a section regarding key performance indicators (KPIs) as illustrated in Figure 3. Disclosed KPIs include indicators for OP Financial Group's service channels, like the number of digital channels or visits per month in online and mobile services; eService Agreements; branches; and telephone services, like customer contacts in telephone service per month. Moreover, there are indicators for social media, like followers on Facebook, Twitter, LinkedIn, Instagram and YouTube. Moreover, the number of different types of customers are disclosed. Additional KPIs include key figures and ratios for services based on financial intelligence, like unique users of the Personal Financial Management service, digital home loan decisions made by the Credit Engine, price estimates generated by the property value assessment tool, chat volumes completed by the chatbots, and share of customers very satisfied with answers from the chatbot.

[Figure 3. Examples of Key Figures and Ratios in OP Financial Group's Data Balance Sheet]

Furthermore, indicators for data capabilities and competencies, data capital and protection, and internal control are disclosed. The first set, data capabilities and competencies, consists of the number of employees of OP Financial Group's central cooperative working in data development and refinement tasks, their share of the entire personnel of OP Financial Group's central cooperative, the number of employees trained in the use and management of financial intelligence, and the number of new services using financial intelligence launched in 2019. The second, data capital, includes figures for customer details maintained through the My Profile service, the

quantity of data in analytical databases, the number of electronic documents, the number of paper files, and the number of daily log events collected by centralized log management. The third set of ratios, data protection and internal control, discloses processed customer requests for access to personal data, number of monthly reports sent to authorities, customer complaints related to personal data processing or privacy protection, and finally, cases categorized as personal data breaches.

Motives for A Data Balance Sheet

The data balance sheet model was developed to increase understanding on the development of the continuously increasing data capital and data assets. The interviewed CDO of OP Financial Group provided the following insights into how this organization uses a data balance sheet.

Financial income statement and balance sheet describe the financial perspective, performance, which is the basis for the view formed by the investors, customer owners, and others ... how the company operates and how it performs. Which is missing, is the data capital. Understanding of how the data capital is utilized and how it is connected e.g. to both sides of the balance sheet.... It is really important to be able to tell, more and more, how much of the value creation comes via the data, how it is utilized, how new business models are developed through it, how genuine digitalization is developed, not just translated to digital, but really found new ways to operate and make operation more effective, to create value added and especially, at the end of the day, how to create the customer value, and measure it.

As stated in our introduction, data is growing in importance for business operations, but few companies manage it strategically, a factor that has big impacts on the business. OP Financial

Group's Data Balance Sheet addresses this gap. It depicts how OP Financial Group uses data to implement its strategy and, in this way, improve its business, customer experience, and risk management. The CDO further stated in interview:

Customer and especially the change of customer behavior have been the central themes. ... We have considered how AI will define the bank and insurance industry, how customer behavior changes ... because you can provide more tailored services with it (AI). Especially, we want to provide individualized, high quality and fast service, which means in practice, that we want to tell how it will take place.

This is also present in OP Financial Group's Data Balance Sheet, that is, the nature of data assets and data capital and objectives for their development. OP Financial Group's Data Balance Sheet provides information for stakeholders on the key principles and practices governing responsible and safe exploitation and processing of data. The VP, Artificial Intelligence, provided the following thoughts in interview:

The central idea for data balance sheet is to materialize the idea of Information Valuation Method launched by Gartner (2015), that data should be treated as an asset at the same way that other production commodities and describe it as a part of the financial statement. The idea has not yet materialized, but not really turned to bad either.... Now this data balance sheet makes this real. The main meaning is to tell external stakeholders how the firm is utilizing its data capital. Everyone knows that banks have large data capital, but what makes many of us wonder is that what kind of data assets we can make out of it.

The data protection ombudsman Reijo Aarnio originated the idea for the data balance sheet in 2017. However, the approach to the model was initiated by the CDO, and thus developed into a different direction than disclosures made by some public sector organizations. Moreover,

consulting firms, the Big Four accounting companies, and some IT gurus, like Bill Gates, have discussed the importance and role of data in the future of business. It is very important for OP Financial Group is to be a forerunner in disclosing information using the data balance sheet. The interviewed CDO stated, “Maybe progressiveness is the word we are looking for. We want to communicate to markets, stakeholders, customers, internally, that we are forerunners in the data utilization.” The VP, Artificial Intelligence, added the following in the interview:

The most central motivation have been to illustrate the brand, public image of forerunner player of data utilization in Finland. It started from b2b [business-to-business] perspective and image creation. ... Being a forerunner means that we can recruit better people for data science, storing, reporting and quality.

One reason to disclose a standalone report, and not include a data balance sheet in the CSR or sustainability report, deals with the will to create something genuinely fresh and novel and to gain more attention and impact. The interviewed CDO clarified the roles of these separate reports:

We did not want to “hide” it there, because it would easily get lost in the abyss of the responsibility report. We wanted that this ... would have new and refreshing image ...the responsibility report is of great importance. ... We wanted to differentiate this from responsibility report, even this is also pretty much about the responsibility.

Benefits of A Data Balance Sheet

In OP Financial Group, it is well understood that the data balance sheet is a novel report, but its entire workforce are not fully aware of it or its potential benefits. So, it is a long run journey and a process in that sense. The interviewed CDO stated:

People [who] participated in the development [of the data balance sheet] and the upper management are pretty well aware of it. And maybe the people, who are somehow closely

involved in data processing, storing, adding value to it.... Then there is a big group of personnel, who are not perceiving this close so far. I believe that this is a journey of maturity going on to understand the value and meaning of the data capital. And through understanding of the value and meaning, we can get more out of it amongst the personnel. The VP, Artificial Intelligence, added in interview, “Pretty much everyone know already that ... data balance sheet is disclosed. ...they know the term and have viewed it ... It would be exaggerating to say that it is visible in all everyday practices.”

OP Financial Group has also launched a wide training program for data, AI, and data literacy. The CDO of OP Financial Group shared in the interview how the organization tries to create competitive advantage, customer closeness and better customer experience:

One thing is important here. With this data and its utilization, we try to create competitive advantage, better customer experience, stickiness, that customer feels that (s)he receives something (s)he can't get elsewhere. Customer closeness, wherein there is of course strongly this physical world. We have still wide office network and we try to keep contact with customers, and at the same time create the seamless multichannel experience.

Regarding the strategic connection, the interviewed CDO emphasized that the data and its utilization are part of the business strategies that have an enabling role. He sees the model as a tool for strategic management, transparency, and development, as it allows managers to discuss and think about issues, which otherwise remains untouched, at least with this kind of high intensity. “It surprises me, how useful it really is. It sounds logical only, if you stop thinking it over. If you don't have it in your agenda, you never stop to think it about.” When asked how the data balance sheet is able to describe the extremely important responsible and safe data processing and utilization, the CDO answered in the interview:

I think it opens that up well and it especially illustrates the responsibility, transparency and safety views and trust. Whole bank business is trust business and we have to earn the trust every day. Customers have given their data to our hands, and it has been seen unfortunately in the recent [well-known Finnish data safety crisis] case, you have to lose your protection only once and you have a catastrophic situation. You can lose your trust with just one case.

Finally, the practical benefits deal with visibility of customer data safety and compliance; facilitating opportunities; and the potential for data value creation, data quality, data measurement, and data competencies. The greatest potential lay in the visualization and communication of customer perspectives, new services, transparency, safety, compliance, and a forerunner image to the customers and other external stakeholders as well as personnel.

5. Conclusions

This qualitative case study explored the design and use of a data balance sheet as disclosed by OP Financial Group. We considered this model a new and highly innovative form of corporate voluntary disclosure reporting, which importance and potential stems from the fact that data has become a key element for the banking industry as digitalization has created new business models and revolutionized many traditional operating practices. We found that for customers and other stakeholders, OP Data Balance Sheet provides information on the key principles and practices governing responsible and safe exploitation and processing of data, and illustrates the importance of data in strategic management and its usefulness in providing new digital services, business models, and better customer experience. We argue that the exploitation of data balance sheets will increase in the future, especially among data-intensive companies. Data will be one of the most important components besides environmental, social, and governance reporting because owners, customers, and other stakeholders are increasingly requiring more transparency about value

creation and responsible use of data and AI. Customer-oriented data balance sheet disclosure works well for OP Financial Group, most likely due to its setting, as it is a cooperative, customer owned, and highly data-intensive organization emphasizing customer benefits and responsibility in addition to traditional financial values.

Analyzed through the lens of data monetization literature, we conclude that OP Financial Group has paid attention to and taken advantage of its DVC, as explained in the data balance sheet. Data generation, collection, analysis, and exchange were all clearly observable in OP Financial Group's Data Balance Sheet, as were data acquisition, pre-processing, storage, analysis, and visualization. Data was managed widely in OP Financial Group, increasingly in decision-making, but also to support a variety of stakeholders (Faroukhi et al., 2020). Once generated, data might be used multiple times and for multiple needs (McAfee & Brynjolfsson, 2012), and it can also be potentially exploited by customers as a form of saleable service (Faroukhi et al., 2020).

We observed routes of monetization (Gomez-Arias & Genin, 2009), such as mobile platforms, customer interaction, customer feedback, brand loyalty, and knowledge management. We also noted that OP Financial Group has built great analytical capability based on mathematical and business analytical knowledge, high technical data infrastructure (Najjar & Kettinger, 2013), and has applied predictive and statistical analysis (Bradlow et al., 2017). Even though this study focuses on data balance sheet reporting, it also corroborates earlier findings on the potential benefits of data monetization in the financial industry, like the potential of selling information solutions to external customers, improving core business operations, and boosting product management as well as importance of building capabilities in data science and analytics, talents, and skilled jobs (Alfaro et al. 2019).

We encourage further studies on data balance sheet disclosure in other contexts and with different interpretative and explanatory theories. Moreover, we want to stimulate accounting-based development of data measurement and valuation as one of the most important revenue and value-generating assets in future business.

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Figure 1. The structure of a data balance sheet (OP Group Data Balance Sheet 2019, 23)

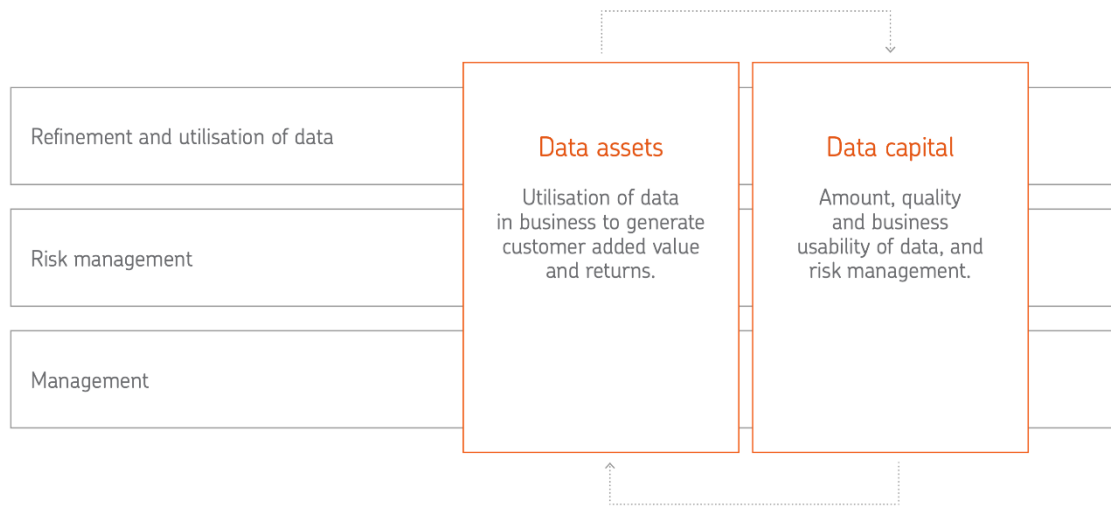


Figure 2. Data Balance Sheet in OP (OP Group Data Balance Sheet 2019, 25)

	Data Asset Management	Data Capital Management						
Objective	Management of the business productivity of data and customer added value	Management of the amount, quality and usability of data, and risk management						
Strategy	• Data driven management	• Data management						
Data value drivers	• Customer insight • Smart services	• OP business and processes insight • Effective operations						
Key forms of data capital, and services using data capital	<table border="0"> <tr> <td style="vertical-align: top;"> <p>Basic services</p> <ul style="list-style-type: none"> • eServices • Mobile services • Customer service • Service advice • Sales • Marketing </td> <td style="vertical-align: top; padding-left: 20px;"> <p>Customer's services</p> <ul style="list-style-type: none"> • My profile • My Finances • Opotti chatbot (Banking) • Vijo chatbot (Insurance) • Digital home loan service • Home price assessment tool • Product recommendation engine • Face payment pilot </td> <td style="vertical-align: top; padding-left: 20px;"> <p>Internal services</p> <ul style="list-style-type: none"> • Shared interfaces • Data security services • Credit Engine • Collateral value determination service • Data protection and data security services • Anti-money laundering • Identification of fraud </td> </tr> </table>	<p>Basic services</p> <ul style="list-style-type: none"> • eServices • Mobile services • Customer service • Service advice • Sales • Marketing 	<p>Customer's services</p> <ul style="list-style-type: none"> • My profile • My Finances • Opotti chatbot (Banking) • Vijo chatbot (Insurance) • Digital home loan service • Home price assessment tool • Product recommendation engine • Face payment pilot 	<p>Internal services</p> <ul style="list-style-type: none"> • Shared interfaces • Data security services • Credit Engine • Collateral value determination service • Data protection and data security services • Anti-money laundering • Identification of fraud 	<table border="0"> <tr> <td style="vertical-align: top;"> <p>Intellectual capital</p> <ul style="list-style-type: none"> • OP employees' human capital <p>External data capital</p> <ul style="list-style-type: none"> • Market data • Population register data • External reference data </td> <td style="vertical-align: top; padding-left: 20px;"> <p>Internal data capital</p> <ul style="list-style-type: none"> • Counterparty data • Product data • Contract data • HR data • Organisational data • Internal reference data • Transaction data • Risk management data • Financial data • Document archives </td> <td style="vertical-align: top; padding-left: 20px;"> <p>Operating models</p> <ul style="list-style-type: none"> • Data protection operating models • OP's data governance models • Data quality management process • Data correction process </td> </tr> </table>	<p>Intellectual capital</p> <ul style="list-style-type: none"> • OP employees' human capital <p>External data capital</p> <ul style="list-style-type: none"> • Market data • Population register data • External reference data 	<p>Internal data capital</p> <ul style="list-style-type: none"> • Counterparty data • Product data • Contract data • HR data • Organisational data • Internal reference data • Transaction data • Risk management data • Financial data • Document archives 	<p>Operating models</p> <ul style="list-style-type: none"> • Data protection operating models • OP's data governance models • Data quality management process • Data correction process
<p>Basic services</p> <ul style="list-style-type: none"> • eServices • Mobile services • Customer service • Service advice • Sales • Marketing 	<p>Customer's services</p> <ul style="list-style-type: none"> • My profile • My Finances • Opotti chatbot (Banking) • Vijo chatbot (Insurance) • Digital home loan service • Home price assessment tool • Product recommendation engine • Face payment pilot 	<p>Internal services</p> <ul style="list-style-type: none"> • Shared interfaces • Data security services • Credit Engine • Collateral value determination service • Data protection and data security services • Anti-money laundering • Identification of fraud 						
<p>Intellectual capital</p> <ul style="list-style-type: none"> • OP employees' human capital <p>External data capital</p> <ul style="list-style-type: none"> • Market data • Population register data • External reference data 	<p>Internal data capital</p> <ul style="list-style-type: none"> • Counterparty data • Product data • Contract data • HR data • Organisational data • Internal reference data • Transaction data • Risk management data • Financial data • Document archives 	<p>Operating models</p> <ul style="list-style-type: none"> • Data protection operating models • OP's data governance models • Data quality management process • Data correction process 						

Figure 3. Examples of Key Figures and Ratios in OP (OP Group Data Balance Sheet 2019, 43)

Key figures and ratios for services based on financial intelligence	2019	Data capital	2019
Unique users of the My Finances service	400,000	Customer details maintained through the My Profile service	~ 250,000
Digital home loan decisions made by the Credit Engine	~ 9,000	Amount of data in analytical databases	519.6 TB
Price estimates generated by the home price assessment tool per month	60,000	Number of electronic documents	520,000,000
Chats completed by the Opotti chatbot (banking services) ~ 70%	~ 70%	Amount of paper files	81,000 metres
Chats completed by the Viljo chatbot (insurance services) ~ 50%	~ 50%	Number of log events collected by centralised log management per day	~ 97,000,000,000
Share of customers very satisfied with answers of the Opotti chatbot	67 %		
Data capabilities and competencies	2019	Data protection and internal control	2019
Employees of OP's central cooperative working in data development and refinement tasks	480	Processed customer requests for access to personal data*	362
... share of the entire personnel of OP's central cooperative	7 %	Number of reports sent to authorities per month	~ 20,000
Employees trained in the use and management of financial intelligence	~ 500	Customer complaints related to personal data processing or privacy protection	11
Number of new services using financial intelligence launched in 2019	20	Cases categorised as personal data breach (see report page 39)	750

For security reasons, OP doesn't publicly report key figures related to anti-fraud and anti-money laundering.

* In finance and insurance operations