



# The Challenge of Corporate Digital Responsibility – An Analysis of Key Elements for CDR Implementation

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## Abstract

The strategic implementation of Corporate Digital Responsibility (CDR) can be the key to leveraging digital technologies and creating value for all stakeholders while minimizing their negative impacts. Digital technologies are indispensable, but they also pose risks if implemented incorrectly, such as the unethical use of AI or high energy consumption.

An exploratory sequential, mixed methods approach is used to analyze the challenges and key elements of CDR implementation. The combination of pre-filled company surveys and subsequent semi-structured interviews resulted in exploratory findings on this emerging topic. Many companies are partially implementing CDR, but mostly unintentionally and without realizing its full potential. Furthermore, overall awareness of CDR is very low, leading to challenges in implementing CDR, such as a lack of guidance and structure. Based on this, several key elements were identified, starting with a holistic view of the economic, social, environmental and technological factors of CDR, which must be integrated into the core strategy. CDR must also be communicated transparently and comprehensively to all stakeholders and go beyond compliance. Moreover, in the fast-changing environment of digital innovation, it is important to anticipate consequences and constantly adapt the strategy. CSR serves as a foundation for CDR implementation due to similar goals, but CDR expands the scope and is the next major strategic shift for companies.

*Title:* The Challenge of Corporate Social Responsibility – An Analysis of Key Elements for CDR Implementation

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## Sumário

A implementação estratégica da Responsabilidade Digital Corporativa (RDC) pode ser a chave para tirar partido das tecnologias digitais e criar valor para todas as partes interessadas, minimizando simultaneamente os seus impactos negativos. As tecnologias digitais são indispensáveis, mas também apresentam riscos se forem implementadas incorretamente, como a utilização não ética da IA ou o elevado consumo de energia.

É utilizada uma abordagem exploratório-sequencial de métodos mistos para analisar os desafios e os elementos-chave da implementação da RDC. A combinação de inquéritos pré-preenchidos às empresas e subsequentes entrevistas semi-estruturadas resultou em conclusões exploratórias sobre este tópico emergente.

Muitas empresas estão a implementar parcialmente a RDC, mas, na sua maioria, de forma não intencional e sem perceberem todo o seu potencial. Além disso, o conhecimento geral da RDC é muito baixo, o que leva a desafios na implementação da RDC, como a falta de orientação e estrutura. Com base nisto, foram identificados vários elementos-chave, começando por uma visão holística dos fatores económicos, sociais, ambientais e tecnológicos da RDC, que devem ser integrados na estratégia base. A RDC deve também ser comunicado de forma transparente e abrangente a todas as partes interessadas e ir para além do simples cumprimento. Além disso, num ambiente em rápida mutação da inovação digital, é importante antecipar as consequências e adaptar constantemente a estratégia. A Responsabilidade Social Corporativa (RSC) serve de base para a implementação da RDC devido aos objetivos semelhantes, mas a RDC alarga o âmbito e é a próxima grande mudança estratégica para as empresas.

*Título:* O Desafio da Responsabilidade Social das Empresas - Uma Análise dos Elementos-Chave para a Implementação do CDR

*Autor:* Niklas Philip Angermann

*Palavras-chave:* Responsabilidade digital das empresas, inovação responsável, sustentabilidade digital, ética digital

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## Table of Contents

<b>LIST OF FIGURES .....</b>	<b>VII</b>
<b>LIST OF ABBREVIATIONS.....</b>	<b>VIII</b>
<b>1. INTRODUCTION.....</b>	<b>1</b>
<b>1.1 BACKGROUND AND RELEVANCE.....</b>	<b>1</b>
<b>1.2 PROBLEM STATEMENT.....</b>	<b>2</b>
<b>1.3 RESEARCH METHODS .....</b>	<b>3</b>
<b>1.4 DISSERTATION OUTLINE.....</b>	<b>3</b>
<b>2. LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK.....</b>	<b>4</b>
<b>2.1 SUSTAINABLE DEVELOPMENT .....</b>	<b>4</b>
<b><i>2.1.1 Corporate Social Responsibility.....</i></b>	<b><i>4</i></b>
<b><i>2.1.2 Responsible Innovation.....</i></b>	<b><i>5</i></b>
<b><i>2.1.3 Key Elements for the Implementation of CSR.....</i></b>	<b><i>6</i></b>
<b>2.2 DIGITALIZATION .....</b>	<b>7</b>
<b><i>2.2.1 Digital Maturity.....</i></b>	<b><i>7</i></b>
<b><i>2.2.2 Digital Ethics.....</i></b>	<b><i>8</i></b>
<b><i>2.2.3 Digital Technologies .....</i></b>	<b><i>9</i></b>
<b>2.3 RESPONSIBILITY IN THE DIGITAL CONTEXT .....</b>	<b>10</b>
<b><i>2.3.1 Digital Sustainability.....</i></b>	<b><i>10</i></b>
<b><i>2.3.2 Corporate Digital Responsibility .....</i></b>	<b><i>11</i></b>
<b><i>2.3.3 Key Elements for the Implementation of CDR .....</i></b>	<b><i>12</i></b>
<b>2.4 CONCEPTUAL FRAMEWORK .....</b>	<b>15</b>
<b>3. METHODOLOGY .....</b>	<b>17</b>
<b>3.1 RESEARCH APPROACH.....</b>	<b>17</b>
<b>3.2 DATA COLLECTION AND SAMPLING .....</b>	<b>17</b>
<b>3.3 DATA ANALYSIS .....</b>	<b>20</b>
<b>4. RESULTS AND DISCUSSION .....</b>	<b>22</b>
<b>4.1 RESULTS OF THE PRE-FILLED SURVEY ANALYSIS.....</b>	<b>22</b>
<b>4.2 RESULTS OF THE INTERVIEW ANALYSIS .....</b>	<b>26</b>
<b>4.3 DISCUSSION .....</b>	<b>33</b>
<b>5. CONCLUSION .....</b>	<b>40</b>
<b>5.1 MAIN FINDING.....</b>	<b>40</b>
<b>5.2 MANAGERIAL AND ACADEMIC IMPLICATIONS .....</b>	<b>41</b>
<b>5.3 LIMITATIONS AND FURTHER RESEARCH.....</b>	<b>42</b>
<b>REFERENCES.....</b>	<b>X</b>
<b>APPENDICES .....</b>	<b>XIX</b>
<b>APPENDIX 1: SUSTAINABLE VALUE FRAMEWORK.....</b>	<b>XIX</b>
<b>APPENDIX 2: STAGES OF SUSTAINABILITY.....</b>	<b>XX</b>

<b>APPENDIX 3: DETAILS ON SMACIT+AI TECHNOLOGIES .....</b>	<b>XXI</b>
<b>APPENDIX 4: PRE-FILLED SURVEY .....</b>	<b>XXIII</b>
<b>APPENDIX 5: COMPANY SAMPLE.....</b>	<b>XXVIII</b>
<b>APPENDIX 6: INTERVIEW GUIDELINE.....</b>	<b>XXIX</b>
<b>APPENDIX 7: INTERVIEW CODING TABLE.....</b>	<b>XXX</b>
<b>APPENDIX 8: INTERVIEW TRANSCRIPTS .....</b>	<b>XXXI</b>

## List of Figures

Figure 1: Pyramid of CSR (Carroll, 1991).....	5
Figure 2: Stages of Digital Maturity (Westerman et al., 2011).....	8
Figure 3: Basic conceptual constituents of CDR (Lobschat et al., 2021) .....	14
Figure 4: Conceptual Framework (Own Illustration).....	16
Figure 5: Multi-Stage Research Approach (Own Illustration).....	20
Figure 6: Stages of Sustainability.....	22
Figure 7: The Importance of SMACIT+AI Technologies .....	23
Figure 8: Stages of Digital Maturity .....	23
Figure 9: Responsible Department for CDR.....	24
Figure 10: General Results on CDR.....	24
Figure 11: Areas of CDR Application.....	25
Figure 12: Basic Conceptual Constituents of CDR.....	25
Figure 13: CDR Categories .....	26
Figure 14: CDR Engagement and Impact .....	26
Figure 15: Key Elements of CDR .....	28
Figure 16: CDR Categories .....	30
Figure 17: Basic Conceptual Constituents of CDR.....	31
Figure 18: Areas of CDR Application.....	32
Figure 19: CDR Implementation (Own Illustration).....	38
Figure 20: Sustainable Value Framework (adapted from: Hart & Milstein, 2003) .....	XIX

### List of Abbreviations

AI	Artificial Intelligence
AMP	Academy of Management Perspectives
BMJV	Bundesministerium für Justiz und Verbraucherschutz
CEO	Chief Executive Officer
CIO	Chief Information Officer
CSR	Corporate Digital Responsibility
CSR	Corporate Social Responsibility
CSRD	Corporate Sustainability Reporting Directive
e.g.	For example (Lat. <i>exempli gratia</i> )
EU	European Union
GDPR	General Data Protection Regulation
ICT	Information and Communication Technology
i.e.	That is (Lat. <i>id est</i> )
IT	Information Technology
Para	Paragraph
SME	Small or Medium Enterprise
TBL	Triple Bottom Line
Wi-Fi	Wireless Fidelity
WCED	World Commission on Environment and Development

## 1. Introduction

*"A lot of the challenges we see on the energy side and on the environmental side, we're only going to be able to address with technology and with smart solutions. We are part of the solution."* (Dr. Sven Schneider, CFO of Infineon Technologies AG, 2023) (Schneider & Meyer, 2023). This citation shows the importance of digital technologies in our society. Although they are causing new problems through high energy consumption, personal data issues or changes in the job market, they could be the key to a more responsible and sustainable world (George et al., 2021). Therefore, this dissertation will focus on the interconnection between responsibility and digital technology by exploring the challenges and key elements of the new concept Corporate Digital Responsibility (CDR).

### 1.1 Background and Relevance

*"Europeans are a lot less friendly to new innovations"* (Alex Karp, CEO of Palantir) (Johnston & Pitel, 2023). Especially in Europe, privacy concerns are a bigger issue for technology companies than macro-economic factors. Through fast paced technological advancement and changing laws and regulations, corporations are forced to care about the responsible use of digital technologies. At the same time, they create challenges for companies to implement innovations. Concerns about the usage of personal data are raised, which intensified due to negative press such as the Cambridge Analytical scandal (Confessore, 2018; Kolenik & Gams, 2021). Approximately 70% of people older than Generation Z (born between 1995 and 2010) are positively influenced by firms that publicly care about data protection, compared to over 50% of younger generations. Hence, among younger generations, data privacy is not a positive influence on a brand's image but rather a basic expectation. They are also more aware of the opportunity to decide by themselves whether their data should be stored and if so, for how long before automatically being deleted. This demonstrates that the best data protection practices for businesses to adopt are transparency and control (Marlatt, 2022).

The awareness of sustainability is already established among many companies, which is not only caused by laws forcing companies of a certain size to engage in Corporate Social Responsibility (CSR) reporting (European Parliament, 2022). Frameworks like the Triple Bottom Line (TBL) or the CSR pyramid can help to understand the touchpoints a company has with CSR and therefore make it easier to strategically implement and measure this concept (Carroll, 1979, 1991; Elkington & Rowlands, 1997). Additionally, it can be helpful to discover

challenges preventing companies from integrating digital technologies responsibly into their corporate strategy. Therefore, concepts like responsible innovation or digital ethics create a connection between CSR and digitalization by defining important dimensions for companies to follow in order to increase responsibility by addressing a company's core strategy.

Digitalization itself is already a complex strategic topic for companies. As the growth of companies is nowadays often defined by how innovative, respectively digitalized a company is, a framework to assess a company's digital maturity can help to gain insights on the influence of digitalization on responsibility. Hence, CDR is a new concept trying to integrate the responsible use of digital technologies into corporate strategies. Although the concept is relatively similar to CSR, there are barely any companies that use CDR as a strategy to create value, due to unclear guidelines and challenges such as changing circumstances caused by innovations and legislations.

According to a call for research on digital sustainability, issued by the Academy of Management Perspectives (AMP) in December 2022, the research in the field of CDR is at the very beginning. Nevertheless, the named current events visualize the impact of digital technologies, which results in the necessity to create academic as well as managerial implications in this field (Collings et al., 2022). Hence, this dissertation aims to partially fill this research gap and contribute to raising awareness of CDR among organizations.

## **1.2 Problem Statement**

In order to use CDR as an opportunity to create value for the firm and all stakeholders, the challenges which occur when companies try to integrate CDR into their operations need to be known and minimized. Therefore, the scope of this dissertation is to identify the main challenges and key elements to the implementation of CDR into companies. This problem statement leads to the following research questions:

*RQ1: What are the challenges of CDR implementation?*

This will presumably be transferrable from existing challenges of implementing CSR and digital technologies (Elliott et al., 2021; Lobschat et al., 2021; Ross et al., 2017).

*RQ2: What are the key elements of CDR implementation?*

Being compliant with legislative regulations, clear communication and engagement of all stakeholders are expected to be important elements for successfully implementing CDR (Lobschat et al., 2021; Yokoi et al., 2023).

*RQ3: What is the influence of CSR and sustainability measures on CDR?*

It can be expected that companies which are active in sustainable initiatives are more engaged in CDR (Gazzola & Gianluca, 2014).

*RQ4: What could the future of CDR look like?*

New regulations could change the urgency of CDR which are rapidly introduced due to the fast evolutionary pace of digital technologies (Collings et al., 2022; Jaffe et al., 2001).

This dissertation provides an academic framework which includes important challenges and key elements of CDR. It leads to managerial implications of what challenges to expect when implementing CDR.

### **1.3 Research Methods**

The gap in the literature is filled with an exploratory sequential, mixed method approach. After conducting an extensive literature review a survey is constructed, which is tested in pilot interviews. Subsequently, the survey is pre-filled with openly available secondary data before it is sent to potential respondents of pre-selected companies in each of the focused technologies. Afterwards, the data is analyzed, creating new insights which are then validated in semi-structured interviews with company representatives. Due to the novelty of the concept, an exploratory analysis of the survey data as well as the interviews is chosen.

### **1.4 Dissertation Outline**

This dissertation uses theoretical literature which leads to the construction of an empirical study. The literature review begins with the topic of sustainability and sustainable development. This, in conjunction with the topic of digitalization, where digital maturity, digital ethics and different digital technologies are introduced, leads to the interconnected topic of CDR. The third chapter focuses on the applied methodology, explaining the research approach, design and data analysis. Afterwards, chapter four displays the findings and results of the study followed by a discussion. This leads to a conclusion and managerial implications as well as limitations and suggestions for further research.

## 2. Literature Review and Conceptual Framework

### 2.1 Sustainable Development

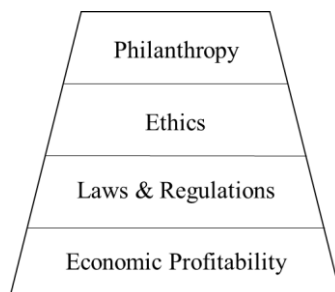
Sustainable development is the basis of responsible governance and defined as: “(...) *meeting the needs and aspirations of the present generation without compromising the ability of future generations to meet their needs*” (Brundtland, 1987, p.292). Hence, sustainability or sustainable behavior is the balance between creating economic growth by using natural resources while ensuring their continued availability (Hueting & Reijnders, 1998). Moreover, one of the most important frameworks to determine sustainable development in the corporate context is the “Triple Bottom Line” (TBL) (Elkington & Rowlands, 1997). With the TBL, it is possible to assess the sustainability efforts of a company as its social and environmental impact is set into perspective with the company’s economic (financial) performance (Savitz, 2013). Before the concept of the TBL was introduced, the goal of most companies was to increase profits while lowering costs and diminishing risks (Friedman, 2007). Nowadays, the focus additionally shifts to the societal impact on a company’s stakeholders which not only includes its shareholders but also employees, customers, suppliers, vendors or the general public (Parmar et al., 2010). This is also caused by a shift of mindset which led to the customer’s request of buying more sustainable products from conscious and transparent brands and employees choosing to work for such companies (Garvare & Johansson, 2010).

#### 2.1.1 Corporate Social Responsibility

The phrase CSR is used to describe a company's societal obligation in terms of environmentally friendly and overall sustainable business methods, which is often used as a synonym to sustainability in a business context (Bansal & DesJardine, 2014). One of the first definitions of CSR was published in 1953: “(...) *the obligations of businessman to pursue those policies, to make those decisions, or to follow those lines of action that are desirable in terms of the objectives and values of our society*” (Bowen, 1953, p.6). A study from 2010 showed that almost 40 different definitions of CSR existed (Dahlsrud, 2008). These definitions can often be narrowed down to universally applying dimensions of CSR which were defined by Carroll (1991) in his “Pyramid of CSR” (see Figure 1)(Carroll, 1991). It includes the *economic* responsibility as the basis of the concept what refers back to the argument of a company’s need to be financially stable (Carroll & Shabana, 2010). The second dimension is the *legal* responsibility of a firm to abide by laws and obligations, followed by the third responsibility of

*ethics*. Lastly, the *philanthropic* dimension is termed as a voluntary effort in response to broader societal needs that are not directly connected to the firm's scope (Carroll, 1979, 1991).

Figure 1: Pyramid of CSR (Carroll, 1991)



Since CSR reports have to be published in the European Union (EU) by listed companies or companies with more than 500 employees, due to a law named “Corporate Sustainability Reporting Directive” (CSRD), the concept of CSR has gained importance (Gulenko, 2018). In 2024, this applies for companies with more than 250 employees (European Parliament, 2022).

### 2.1.2 Responsible Innovation

The connection between sustainable development, CSR and digitalization continues with the topic of responsible innovation. Industry 4.0 is the collective result of the last big innovations and not all of them are based on responsible values (Chen et al., 2021). Therefore, this chapter aims to provide a basis of how digitalization, as one of the most important innovations of the 21<sup>st</sup> century, can be implemented responsibly. Due to many divergent definitions of responsible innovation, a detailed literature review was conducted by Burget et al. in 2016, which led to a structured definition. Companies focusing on responsible innovation should engage with all stakeholders when it comes to innovative development. The intent of involving various stakeholders and the general public is to increase the likelihood that society will benefit from research or innovation and to identify any potential negative impacts (Burget et al., 2017). Across the broad literature about responsible innovation, the four dimensions of a framework by Stilgoe, Owen and Macnaghten (2013) are used to assess and measure responsible innovation in the corporate context (Lubberink et al., 2017; Owen et al., 2012; Stilgoe et al., 2013):

*Anticipation* can be summarized as thinking critically about the firm's future possibilities. This can help to prevent negative scenarios and potentially adapt in advance (Owen et al., 2012).

Most importantly, the timing of anticipation must be early enough to adapt, but not too early to have a significant impact (Rogers-Hayden & Pidgeon, 2007).

*Reflexivity* entails critically assessing personal actions with regards to individual knowledge gaps and biases. To enhance reflexivity the initial engagement of different stakeholders is recommended (Conley & York, 2020; Owen et al., 2012).

*Inclusion* focuses engaging with external stakeholders such as NGOs, scientific experts, or other indirectly affected potential advisors (Owen et al., 2012).

*Responsiveness* can be termed as the collective ability to implement the suggested changes of engaged stakeholders in a timely manner (Lubberink et al., 2017; Owen et al., 2012).

This framework can be beneficial in the context of realizing innovation, which includes the implementation of digital technologies in a responsible way.

### **2.1.3 Key Elements for the Implementation of CSR**

According to Gazzola & Gianluca (2014), the main goal to become a responsible company is to fully integrate CSR into the corporate structure and culture in order to achieve the highest possible return - which is a value increase along the three dimensions of the TBL: Economic performance, social value for all stakeholders and environmental benefits (Carroll, 1991; Gazzola & Gianluca, 2014). By attaching CSR to the vision and purpose of a company, employees will be more engaged with CSR and therefore be able to support the initiative (Jonker & De Witte, 2006). Ultimately, successful implementation means integrating the idea of CSR into the business process. This requires a re-evaluation of current business strategies and practices which can lead to a completely changed company vision (Jonker & De Witte, 2006). Hart's *Sustainable Value Framework* (see Appendix 1) as well as the TBL can be used as a starting point to assess the current status and fully implement sustainable responsibility into a corporate strategy (Hart, 1997; Hart & Milstein, 2003). Additionally, the *Stages of Sustainability* model by Landrum (2018) can be used, which has five different levels to assess how integrated sustainability and social responsibility are in the corporate processes on a scale from very weak to very strong integration (Landrum, 2018) (see Appendix 2).

## 2.2 Digitalization

The 21st century is characterized by a “digital economy” where it is important to precisely implement digitalization in the company, using an overarching strategy for digital innovation and transformation (Ross, 2014). Therefore, organizations need to develop and adapt to new technologies because of the ever-changing technological environment. Numerous companies ignore the need for organizational change in favor of focusing primarily on implementing technology, hardware or digital capabilities because changing an organization's culture is often more challenging than changing its digital capabilities (Khan Pathan, 2018). Additionally, redefining their customer value propositions and reforming their operations with digital technology, to better connect and collaborate with customers, are the two corresponding actions that companies must focus on, for effective digital transformation (Berman, 2012). Hence, similar to the sustainable value framework for sustainability initiatives, there are internal and external factors, as well as a timely differentiation to assess digital innovation initiatives.

Comparable to CSR or sustainability strategies, digital transformation can create a positive impact on the company's TBL. For example, on the economic and the social dimension by creating new business models and on the ecological dimension by enhancing processes, which results in less faulty goods and reduced waste (Lopes de Sousa Jabbour et al., 2018; Machado et al., 2020). Thus, digital transformation can be described with leveraging technologies that create, analyze and transmit data to deliver value (Appelfeller & Feldmann, 2018).

### 2.2.1 Digital Maturity

*Digital Maturity* is a process of developing transformational leadership and the ability to use digital tools and techniques to achieve the organization's mission (Brodny & Tutak, 2023). It can be explained as: “(...) *aligning an organization's people, culture, structure and tasks to compete effectively by taking advantage of opportunities enabled by technological infrastructure, both inside and outside the organization*” (Rader, 2019, p.29). A digitally mature company has a better financial performance than others, which implies that digital maturity has an influence on the TBL (Westerman et al., 2014). Similar to the stages of sustainability, a model which can help to assess the phases of digitalization, digital transformation and respectively digital maturity of a company is used to enhance the implementation process and to find potential challenges (Kupilas et al., 2023). Hence, in this framework, four stages of digital maturity can be defined (Westerman et al., 2011, 2014):

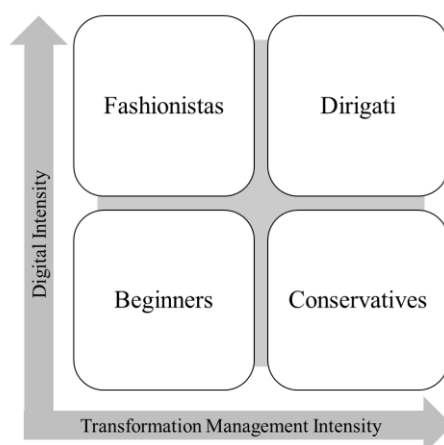
*Beginners*: Only implemented conventional digital applications like e-commerce. Mostly, a digital beginner company does not know about their status.

*Conservatives*: Focus on a strong corporate strategy and overall innovation but no risky investments into digitalization.

*Fashionistas*: Only tried a few, seemingly helpful and innovative digital products but without a strategy and proper integration into the company.

*Dirigati*: These companies understand the opportunities which digitalization provides to achieve the highest value outputs. A thoughtful strategy of digital innovation leads to a competitive advantage and better financial performance.

Figure 2: Stages of Digital Maturity (Westerman et al., 2011)



Lastly, the success of the organization depends on immersive development, continuous learning and empowering leaders which, in general, states that people are more indispensable than technology (Rader, 2019).

### 2.2.2 Digital Ethics

Increasing awareness of issues such as social media influence, mobile network availability, data security, cloud leaks consequences of unethical AI or the environmental impact of digital technologies has led to a call for clearer guidelines and regulations regarding the use and implementation of digital technologies (Mahieu et al., 2018). There are already guidelines in place such as the “Ethics Guidelines for Trustworthy AI”, which were established by experts on AI at the European commission. Nevertheless, latest developments such as the launch of

ChatGPT have shown that guidelines are not clear, strict or updated enough in many cases (European Commission, 2019; Héder, 2020). Therefore, digital ethics gain importance and can be defined as: “(...) *the branch of ethics that studies and evaluates moral problems relating to data and information (...), algorithms (...) and corresponding practices and infrastructures (...), in order to formulate and support morally good solutions (...). Digital ethics shapes digital regulation and digital governance through the relation of moral evaluation*” (Floridi, 2018, pp.3-4; Lemke et al., 2021).

Hence, digital ethics go beyond laws and regulations and are the basis of providing companies with norms and values on how to implement digital technologies responsibly.

### **2.2.3 Digital Technologies**

In 2023, digital technologies like artificial intelligence (AI), cloud computing, internet of things (IoT), social media and data (analytics) - especially cookies, are part of an individual's daily life (Urbach et al., 2019). These digital technologies can be defined by seven distinctive characteristics which differentiate them from analog pendants (Yoo et al., 2010): *Programmability, Addressability, Perceptibility, Communicability, Memorability, Traceability & Predictability*.

In order to narrow down the focus of this research to the most important digital technologies, the “SMACIT” acronym from Jeanne Ross, who is the director and principal research scientist at MIT Sloan, is used (Ross, 2014). It clusters all important technologies of the digital economy and stands for:

**Social + Mobile + Analytics + Cloud + Internet of Things = SMACIT**

Social includes online networks and social media platforms. Mobile is on the one hand the connection to mobile networks such as 5G and Wi-Fi and on the other hand includes mobile applications. Analytics is connected to data and so is cloud computing. Lastly, IoT is the connection between physical devices and the internet. Appendix 3 includes a list of all named technologies with brief explanations and definitions for reference.

As the digital economy has developed quickly since the acronym was created in 2014, the technology of Artificial Intelligence is added because this is currently one of the major

disrupting technologies (Girasa, 2020; Urbach et al., 2019). Consequently, the SMACIT acronym with the addition of AI is used in this dissertation to set a focus of digital technologies:

### **SMACIT+AI**

Many industries are affected by the disruption of SMACIT+AI technologies and most of the disruptions among different industries occur due to insufficient integration into their processes (Girasa, 2020). Moreover, a lack of knowledge management between different business units often leads to separate approaches of solving the disruption (Ross et al., 2006). Hence, SMACIT+AI technologies offer innovative and new business opportunities but without the right strategy and structure, a company lacks speed and agility to react to changes in a timely manner (Ross et al., 2017). A special importance at the implementation lies in the creation of an underlying infrastructure that enhances knowledge management between the business units. Digitization can create a solid operational foundation and a comprehensive set of business processes which are consistent and supported by hardware, software and data to ensure the reliability and consistency of essential business activities (Ross et al., 2006). These prerequisites enable the management to gain a clear understanding of digital goods and services while ensuring that newly implemented technologies are effectively leveraged (Ross et al., 2017). These challenges are also named in articles of numerous experts on the topic of digital responsibility and CDR and are partly integrated in frameworks which are explained in the following chapter (Elliott et al., 2021; Lobschat et al., 2021; Price et al., 2021; Wade, 2020; Wade & Shan, 2020).

## **2.3 Responsibility in the Digital Context**

Responsibility in the digital context is a novel topic, currently gaining importance through disrupting innovations. Therefore, the topic of CDR can evolve to a core strategy of companies in the future (Thorun et al., 2018).

### **2.3.1 Digital Sustainability**

The interconnection between the concepts of sustainability and digitalization is distorted. The TBL or the *CSR Pyramid* can be used as base models but there are other key aspects to be taken into consideration (Bohnsack et al., 2022).

According to Pinkse and Bohnsack (2021), digital technology can have a positive impact on sustainability as long as it is implemented correctly. Therefore, most of the consequences related to sustainability benefits of digital technologies can only be assessed after they were implemented and used (Pinkse & Bohnsack, 2021). Additionally, the positive influences of digital technologies on sustainability can decrease due to unintended consequences such as a change in the job market caused by AI (Bohnsack et al., 2022; Vochozka et al., 2018).

A recent study by the European Commission examined the relationship between firms' environmental attitudes and their adoption of information and communication technologies (ICTs). The survey explained the impact of technologies on business activities and the environment and how environmental motives are influencing the choice of technology. It demonstrated that only one third of the examined companies measure their environmental impact of digital technologies and only very few are changing their business models to be more sustainable. Instead, they often implement digital technologies without a strategic plan nor environmental motive (Bijwaard et al., 2021). Therefore, the concept of CDR is introduced to find guidance for the responsible implementation of digital technologies.

### ***2.3.2 Corporate Digital Responsibility***

The tasks and obligations of corporations are changing and "corporate responsibility" is evolving into "corporate digital responsibility" due to digitalization (Esselmann & Brink, 2016). In 2003, Schwartz and Carroll mentioned the role of digital responsibility where they integrated it into the CSR context, overlooking all actions a company takes. Accordingly, digital responsibility focuses on how digital tools, technologies and data can be implemented and used in an economically, ecologically and socially responsible manner - referring to the TBL (Knobloch et al., 2018; Schwartz & Carroll, 2003). This integrated concept of CDR is slowly being recognized by companies across Europe (Price et al., 2021). According to several experts on the topic, CDR was developed on the premise that companies have a greater obligation of improving social and environmental conditions beyond their legal obligations and to mitigate the effects caused by wrong use or abuse of digital technology (Dörr, 2020; Elliott et al., 2021; Orbik & Zozul'aková, 2019; Wade & Shan, 2020; Whiteman et al., 2013). CDR is therefore defined as “(...) *the set of shared values and norms guiding an organization's operations with respect to the creation and operation of digital technology and data*” (Lobschat et al., 2021, p.2).

Nowadays, every company in the digital economy is using digital technologies and generating data which implies an individual responsibility of handling this data ethically, besides complying with the local laws and regulations (Lobschat et al., 2021; Teucher & Dalle Molle, 2021). Therefore, programs of governmental institutions who realized that CDR and responsible digitalization should go beyond data protection laws resembling the General Data Protection Regulation (GDPR) or the CSRD, such as the *CDR Building Bloxx* (BVDW, 2023) or the *CDR Initiative* (BMJV, 2018) were formed. Within the *CDR Initiative*, several companies voluntarily agreed to comply with a CDR codex which focuses on the individual responsibility of a company for their digital technologies, including the ethical handling of data, inclusion and climate protection. Additionally, an annual CDR report is published, similar to the obligatory CSR report (BMJV, 2018; Thorun, 2023). Hence, the goal of CDR is to generate internal benefits and leverage digital technologies to create sustainable value for all stakeholders, if correctly implemented.

### ***2.3.3 Key Elements for the Implementation of CDR***

Accenture, who is one of the biggest IT consultancies worldwide, was the first company to introduce the term CDR in 2015 and identified five areas of CDR application (Brink et al., 2020; Cooper et al., 2015; Elliott et al., 2021):

*Digital stewardship* (responsible use of data through privacy and security)

*Digital transparency* (transparency in the use of customer data)

*Digital empowerment* (empowering customers through guidance)

*Digital equity* (fair distribution of profits from the use of customer data)

*Digital inclusion* (making data sets available for research)

As a result, the characteristics of responsible digital businesses include the secure and transparent management of data as well as the prevention of unlawful or unauthorized distribution of data. Additionally, firms should provide anonymized data for research and scientific analysis to benefit social sciences or other institutions after the data is of no value to a firm anymore (Knobloch et al., 2018).

Lobschat et al. (2021) introduced the framework of *Basic Conceptual Constituents of CDR*, which helps to implement CDR in a structured way. It defines four different groups of

stakeholders, starting with *organizations* which not only includes the core firm but also their corporate environment such as providers or collaborators who interact through digital technologies. *Individual actors* are the second stakeholders to be considered in the CDR framework. It is suggested to create a code of conduct for ethically responsible behavior with regards to digital technology which reflects the company's vision, norms and values. In this case, individuals include the firm employees, its management as well as clients. The third group of stakeholders are *artificial and technological actors* which includes decisions and other behaviors from AIs, machine learning algorithms and other non-human individuals. For this group of stakeholders, it is important to mention that the responsibility to steer these entities into an ethically correct direction is with the developers who therefore need to constantly monitor and update these technological actors accordingly. Lastly, *institutional, governmental and legal actors* are important to consider when looking into digital innovations as data protection gained importance and regulations become stricter.

In the next step, Lobschat et al. (2021) identified four interrelated stages of digital technologies which reoccur in a cycle. Those stages are intended to help companies gain a better understanding of potential challenges regarding the responsible implementation of digital technologies. The article suggests finding CDR norms for each stage of the digital technology life cycle in order to cover all aspects relevant to CDR (Nambisan et al., 2017).

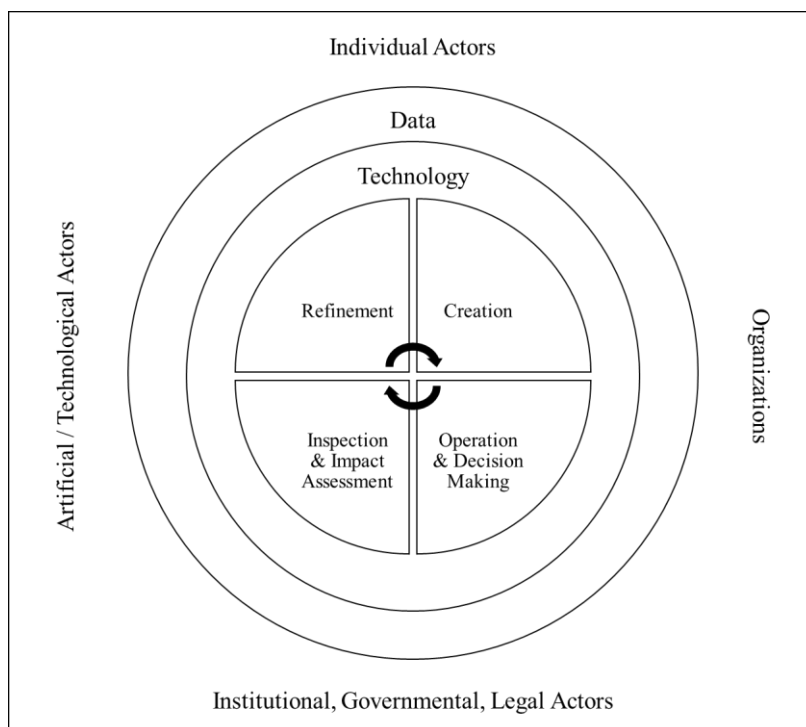
*Creation:* When developing a new technology or selecting an existing one from external sources, ethical considerations are crucial.

*Operation and decision making:* Continuous monitoring of the implemented technology is important to minimize risks of biased data, outdated software and biased or unethical development of AI.

*Inspection and impact assessment:* It is important to be open with users and customers about unintended consequences, including any negative environmental impact, as well as the costs and benefits of sharing their data.

*Refinement:* After the technology has been used or sold, long-term effects should be considered. There is a need for guidelines on data protection, storage and general after-sales support.

Figure 3: Basic conceptual constituents of CDR (Lobschat et al., 2021)



In the model of Wade, CDR is divided into four categories which are based on the TBL with the addition of technological factors (Price et al., 2021; Wade, 2020; Wade & Shan, 2020). This model defines four specific CDR categories:

*Economic CDR:*

- Substituting human labor in a responsible manner
- Guaranteeing that labor is outsourced to the freelance market in a responsible manner
- Distributing the financial gains from digital labor to society, e.g., by taxing
- Maintaining data ownership rights through preventing piracy

*Social CDR:*

- Guaranteeing the protection of workers', clients' and other stakeholders' personal data
- Encouraging digital inclusion and diversity
- Seeking morally decent behavior

*Environmental CDR:*

- Using ethical recycling procedures for digital devices
- Utilizing digital technology responsibly, such as prolonging the life of the device or technology
- Adopting appropriate methods to reduce electricity and resource consumption

*Technological CDR:*

- Guaranteeing morally and ethically correct norms & values for AI algorithms
- Avoiding the creation of digital technologies that might be harmful to society
- Applying ethical methods for online security and data protection
- Adopting ethical standards for validating data and procedures for disposal

Lastly, a very recent *Harvard Business Review* article defined four key elements of CDR which can be found in different contexts in the presented theories. Additionally, they summarize the main prerequisites of CDR implementation (Yokoi et al., 2023):

*Manifesting CDR into the organizational core:* Integration of CDR into the company's norms, values and vision.

*Going beyond regulatory compliance:* Laws and legislations are only the basis of acting digitally responsible.

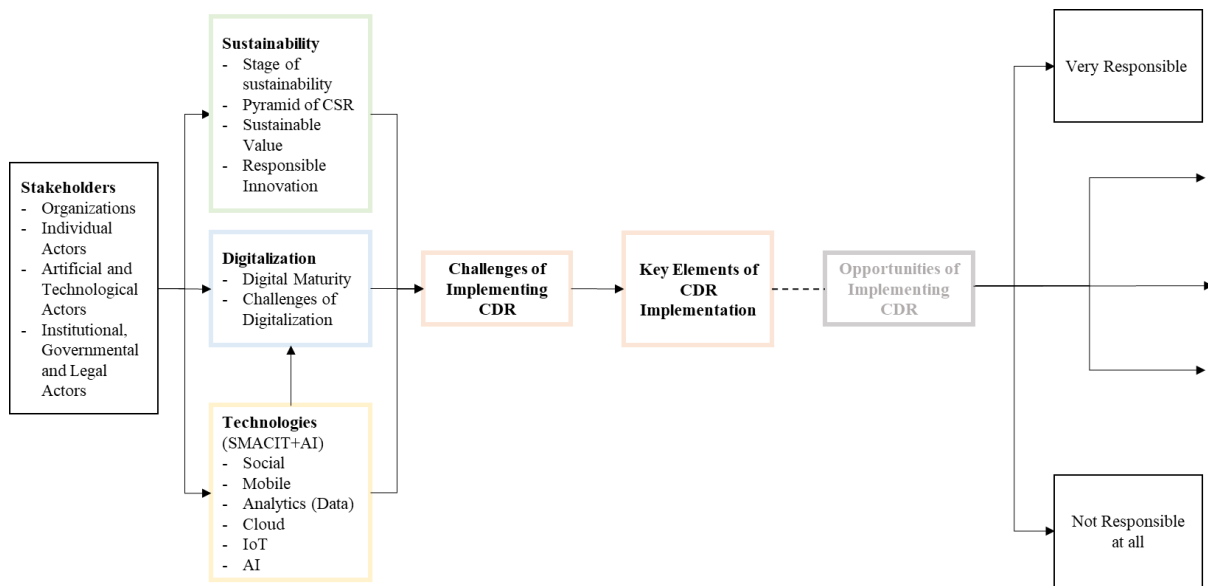
*Clear guidance and governance:* Transparent and direct communication of who is guiding the topic of CDR.

*Making CDR easy to understand for all employees:* Employees are the most important internal stakeholder for successful changes and therefore need to be educated and motivated.

## **2.4 Conceptual Framework**

Based on the literature, a conceptual framework is constructed as the basis for the conducted research of this dissertation. It starts with the stakeholders of the framework by Lobschat et al. (2021) which are having an influence on the three following subtopics. Sustainability includes different frameworks which created the basis of CDR implementation by giving perceptions on how CSR is implemented. In combination with digitalization and digital maturity as well as the focused digital technologies of SMACIT+AI, this leads to the challenges and key elements of CDR implementation which have an influence on the responsible performance of a company. The opportunities of implementing CDR are part of the empirical research but are outside the scope of this dissertation.

Figure 4: Conceptual Framework (Own Illustration)



### 3. Methodology

#### 3.1 Research Approach

The research approach of this dissertation is an exploratory sequential, mixed method which primarily focuses on a qualitative, exploratory analysis and is based on the model of Loane, Bell and McNaughton (2006). The methodological triangulation of the mixed method approach reduces research bias by collecting multiple types of data and maximizes the response rate. Especially when the sample includes companies, they are more interested in interviews as the provided data through the pre-filled survey shows effort (Loane et al., 2006). Furthermore, the descriptive, exploratory analysis is used due to the very novel subject matter, which makes it difficult to conduct statistically relevant quantitative data (Van Aken et al., 2007). Triangulation can be defined as: “(...) *the combination of two or more data sources, investigators, methodologic approaches, theoretical perspectives, or analytical methods within the same study.*” (Thurmond, 2001). The multi-stage approach starts with the quantitative data collection which is based on surveys pre-filled with openly available secondary data such as company reports. This is followed by qualitative, semi-structured interviews to validate the first findings of the pre-filled survey with primary data. Due to time constraints, the novelty of the topic and to maximize the response rate, non-probability sampling, specifically purposive sampling is used in order to gain the most insights out of limited resources, in this case knowledge of CDR (Tracy, 2019). The multi-stage approach is explained in the following chapter and visualized in Figure 5.

#### 3.2 Data Collection and Sampling

The data collection is conducted together with another student who is working on a similar dissertation project which helps to generate a more complete overview of the topic and a larger sample size. Therefore, not every research finding is relevant for this dissertation.

1. *Synthesis & Survey construction (Sample Population)*: After a deductive analysis of existing literature a survey draft was created, including all subtopics from the literature review. The final survey (see Appendix 4) was divided into five subtopics excluding a short company profile and interviewee demographics previous to the actual survey questions. Subtopic one focused on sustainability and CSR to get an overview of the company's efforts. Subtopic two explored the different digital technologies important to each company and a framework to assess their digital maturity. Next was a general

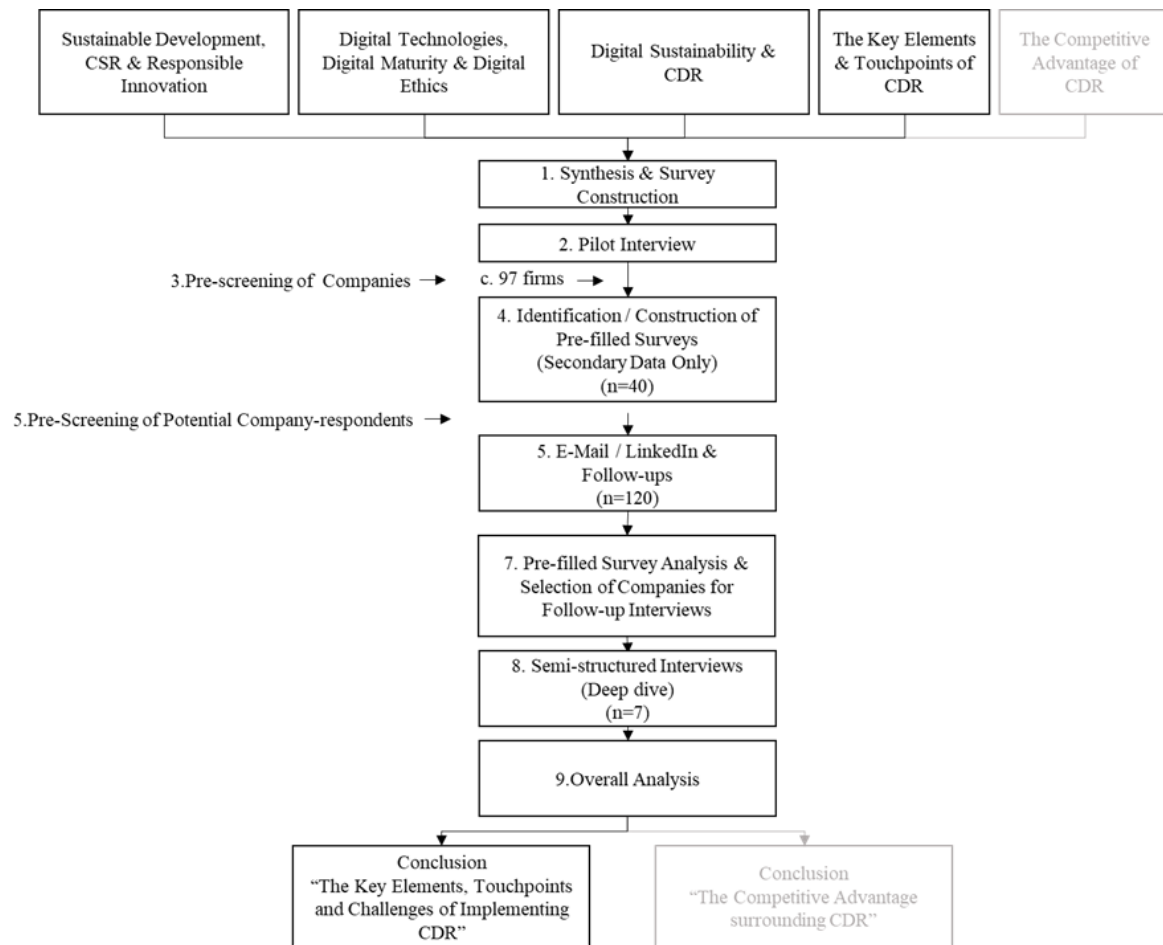
part about CDR in subtopic three to gain insights on how integrated CDR already is. Subtopic four is out of the scope of this dissertation and only used by another student. Hence, subtopic five is the most important to this dissertation as it explicitly focused on challenges and key elements of implementing CDR. All questions in this survey are based on corresponding frameworks explained in the literature review, which is further elucidated in the discussion. Finally, notes on the different subtopics as well as relevant sources are provided at the end of each pre-filled survey.

2. *Pilot Interview*: The research approach started with interviewing multiple employees at a technology averse company in order to test the survey and gain additional information on potential problems or thoughts. This helped to improve comprehensibility, especially with regards to overly academic wording, which led to the final version of the survey.
3. *Pre-screening of Companies (Sampling)*: As a next step, the target sample of companies was created and divided into six different focused technologies (SMACIT+AI). It was looked at digital technology focused companies of different sizes and exposure to create a heterogeneous, cross-sectional sample which generally leads to a higher response rate (Van Aken et al., 2007). To find these companies, the largest tech-focused corporations as well as rather influential start-ups, scaleups and small or medium enterprises (SMEs) were screened (Johnson, 2003). Additionally, all companies participating in the *CDR Initiative* were selected, as those companies are already publishing a CDR report, which created an opportunity to gain valuable insights (Thorun, 2023). The final sample can be found in Appendix 5.
4. *Identification / Construction of Pre-filled Surveys (Secondary Data Collection)*: The surveys were individually pre-filled with openly available secondary data from online sources such as CSR/CDR reports, websites, code of ethics/conduct, certificates, articles, podcasts, LinkedIn or other social media. This helped to gain a comprehensive picture of the company's efforts and initiatives in each subtopic. Additionally, it created the benefit of saving time in the interview as it can be focused around more specific or open questions.
5. *Pre-screening of potential company respondents (Sampling)*: To find optimal respondents to validate the survey, as well as interview respondents, multiple suitable representatives of each of the different companies were contacted in order to increase the chances of a response. The first step in finding the right respondents was to use the contact information from the company's CSR or CDR reports as well as their websites.

Regularly, there was no specific contact information available which led to the second sampling technique. LinkedIn Sales Navigator was used, which is a premium version of the professional social media network LinkedIn. It enables to reach out to companies via a messenger and E-mail at the same time which also increases the response rate (LinkedIn Corporation, 2023). This enables to search within the specific company and set filters for “decision makers” which are higher management positions, as they can provide more valuable insights to the research. Afterwards, a keyword search for suitable focus topics such as “CDR”, “Digital Responsibility”, “Sustainability”, “CSR”, “Responsibility”, “Digitalization”, “Ethics” and/or “Innovation” was completed.

6. *E-Mail / LinkedIn + Follow-ups*: After initially contacting potential respondents, there was a four-week waiting period. Company representatives who did not respond within one week received multiple reminder messages or E-mails.
7. *Pre-filled Survey analysis & selection of companies for follow-up interviews*: The secondary data from the pre-filled surveys was collected in Excel for extended analysis. Through E-mail or in the subsequent interview process, primary data was collected which validated the survey findings. The companies which we conducted interviews with were a heterogenous sample of different industries and sizes that were specifically interested in the topic of CDR and therefore agreed to an interview. The respondents were from different departments and positions including a Founder, CEO, CIO, Consumer Protection Officer, Director Global Public Affairs & Sustainability, Head of Corporate Content and Communications as well as a Strategic Communications Manager.
8. *Semi-structured interviews (Primary Data Collection)*: For the interviews a semi-structured guideline, based on the survey with a focus on the open questions of subtopics 3, 4 and 5, was created (see Appendix 6). Most of the interviews were conducted and recorded via Zoom (web conference provider) which made it possible to retrieve data from the interviews by transcribing and analyzing it. Due to security guidelines of some companies, Microsoft Teams was used. Overall, the video function helped to reduce bias by also looking at the interviewees body language and mimic. The average interview time was 40 minutes.
9. *Overall Analysis & Conclusion*: The analysis is described in detail in the following chapter.

Figure 5: Multi-Stage Research Approach (Own Illustration)



### 3.3 Data Analysis

The first step in data analysis was to transfer the data from the pre-filled surveys to Excel and list it clearly. Then, the individual questions in the subcategories were analyzed through a basic descriptive analysis which allowed to identify initial patterns. In order to illustrate this, first graphs were created, which are presented in the following chapter. Further statistical analysis methods were not used, because the amount of data and the time frame of this dissertation is too short. In addition, the topic is too new and therefore an explorative approach is recommended (Schäfer, 2010).

The analysis of the qualitative interviews is also mainly explorative due to the named prerequisites. To create a transcribed version of each interview, Speechmatics was used, which is an AI-based, automated transcription tool. Afterwards, corrections according to Rädiker and Kuckartz (2019) were made, which means not every word was transcribed as the focus was to

create a readable transcript which is not interrupted by filler words or dialect (Rädiker & Kuckartz, 2019). In case the interview was held in German, the AI-translator DeepL was used and corrections were made afterwards. This part of the research resulted in the primary data collection through the interview findings itself but also by validating the secondary data from the pre-filled surveys which were only occasionally validated directly by E-mail.

For the analysis of the qualitative interviews the software MAXQDA is used. It is a tool to analyze the transcribed interviews in a structured way by color-coding text passages in order to categorize findings (Rädiker & Kuckartz, 2019). A table explaining the used codes, with a short explanation and an anchor example can be found in Appendix 7.

## 4. Results and Discussion

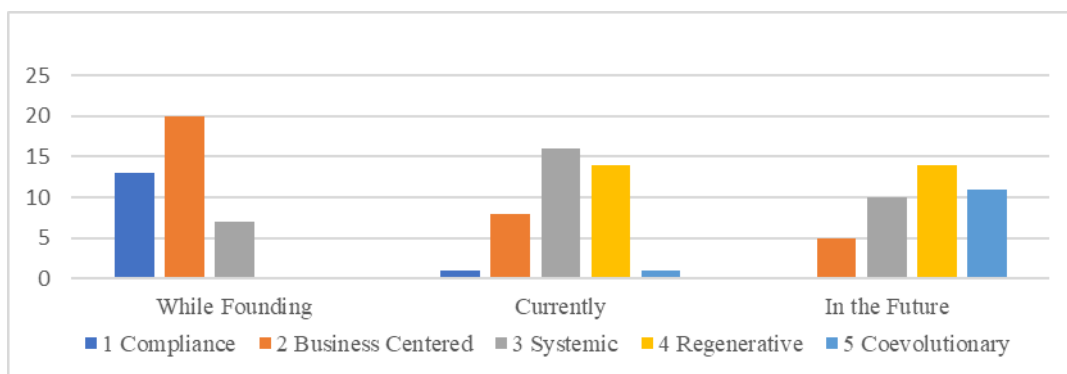
### 4.1 Results of the pre-filled Survey Analysis

The first sample included 97 firms (15 per technology + 7 publishing a CDR report). It was then screened and reduced to the final sample, which included between five and nine companies per technology with 40 companies in total (see Appendix 5). Afterwards, around 120 potential respondents of the sampled firms were contacted by sending the pre-filled survey. Two companies validated the survey data via E-mail and the other survey data can be validated through the results of the interviews presented in the following chapters.

**Subtopic 1 (Sustainability and Sustainable Development):** The overall importance of sustainability was rated as “(very) high” for 80% of the included companies, whereas a CSR report was published by 65% of the observed companies.

When looking at the stages of sustainability, the trend shifts from most companies being compliant or business centered when founding the company to most companies being systemic, regenerative or coevolutionary in the future.

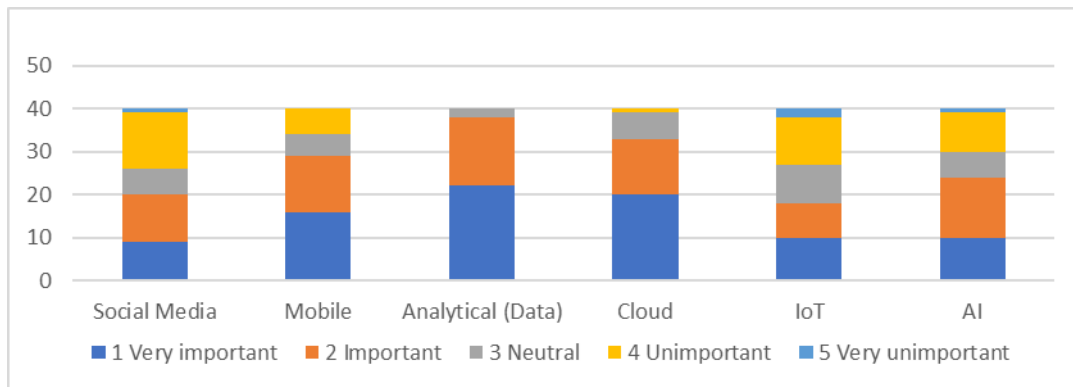
Figure 6: Stages of Sustainability



Regarding responsible innovation, in the category *Anticipation*, most companies would rather follow a detailed plan instead of a trial-and-error strategy. In the category *Reflexivity*, 95% rated to be highly or moderately engaging with internal stakeholders when implementing new innovations. In the category *Inclusion*, 57.5% rated to be highly engaging with external stakeholders when implementing new innovations and 27.5% rated moderately engaging. Lastly, in the category *Responsiveness*, 52.5% rated their implementation and feedback process as highly agile and flexible and 42.5% rated it as moderately agile and flexible.

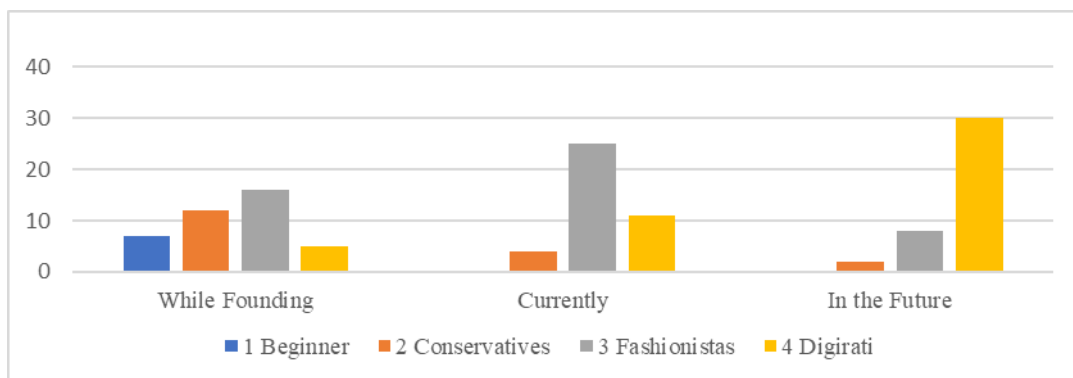
**Subtopic 2 (Digitalization):** Data and Cloud are the most important digital technologies to the sampled companies. The other technologies were only (very) important to individual companies depending on their product or service. The dataset included an almost even distribution of focused technologies from which each company creates revenue.

*Figure 7: The Importance of SMACIT+AI Technologies*



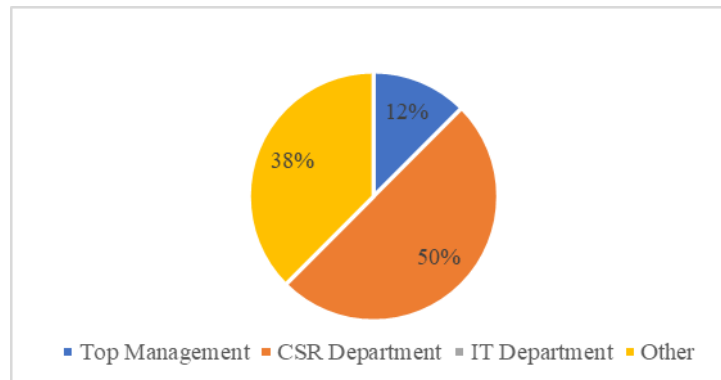
Regarding the stages of digital maturity, there is a shift observable towards most companies being *Digirati* in the future.

*Figure 8: Stages of Digital Maturity*



**Subtopic 3 (Sustainability in the Digital Context & CDR):** Many companies do not have a specific person or department for CDR. Therefore, the departments in figure 9 were closest to being responsible for CDR.

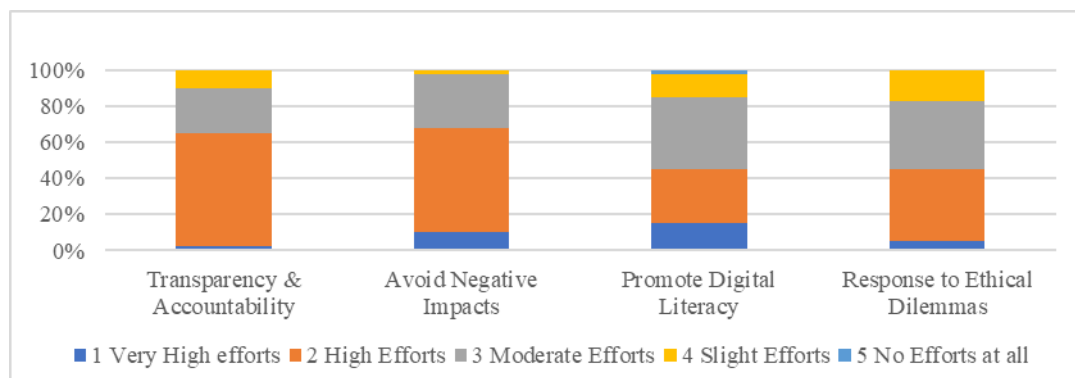
Figure 9: Responsible Department for CDR



A specific CDR report was published by seven of the 40 companies (17,5%), whereas a specific code of conduct or ethics for the responsible use of digital technologies was published by 60%.

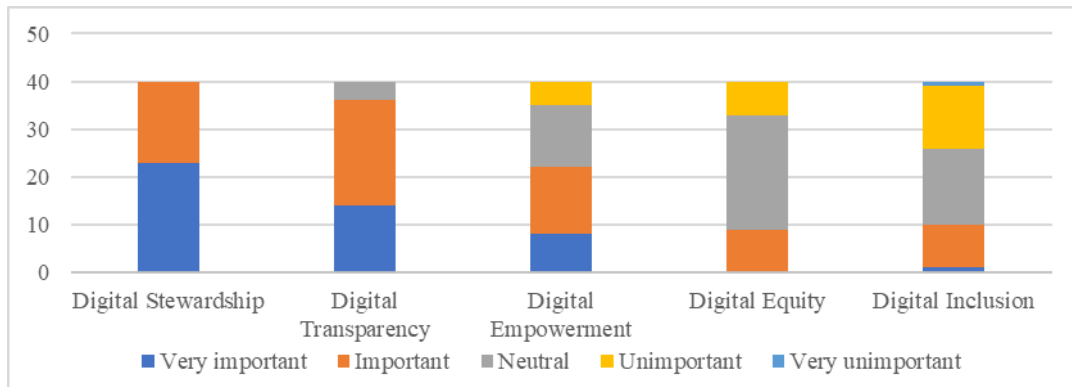
The general questions regarding CDR indicate that *Transparency & Accountability* as well as *Avoid Negative Impacts* are most important to the sample, whereas the other two are not yet integrated into company efforts very often.

Figure 10: General Results on CDR



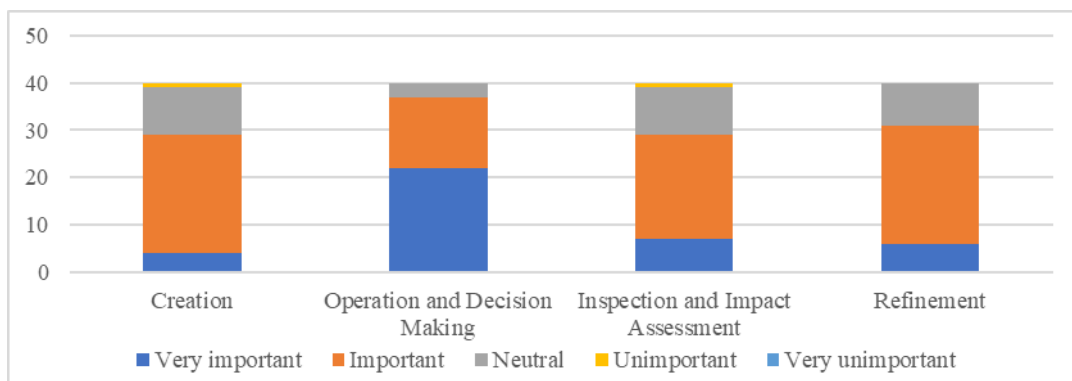
**Subtopic 5 (Challenges & Key Elements of CDR):** The first framework rated the importance of different CDR areas of application derived from Brink et al. (2020). According to this, all companies rated digital stewardship as (very) important. Digital transparency was (very) important to 90% whereas the importance gradually decreases throughout the other areas.

Figure 11: Areas of CDR Application



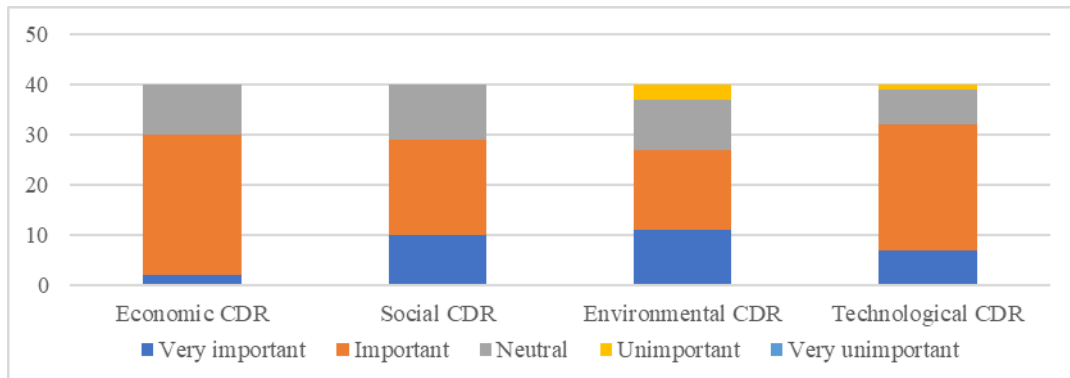
The second framework rated the importance of the basic conceptual constituents of CDR, derived from Lobschat et al. (2021). Constant monitoring (Operation and Decision Making) was the category rated as (very) important by over 90%. Moreover, the other three categories were rated in an almost similar way, being very important to 10-20% and important to 55-62.5%.

Figure 12: Basic Conceptual Constituents of CDR



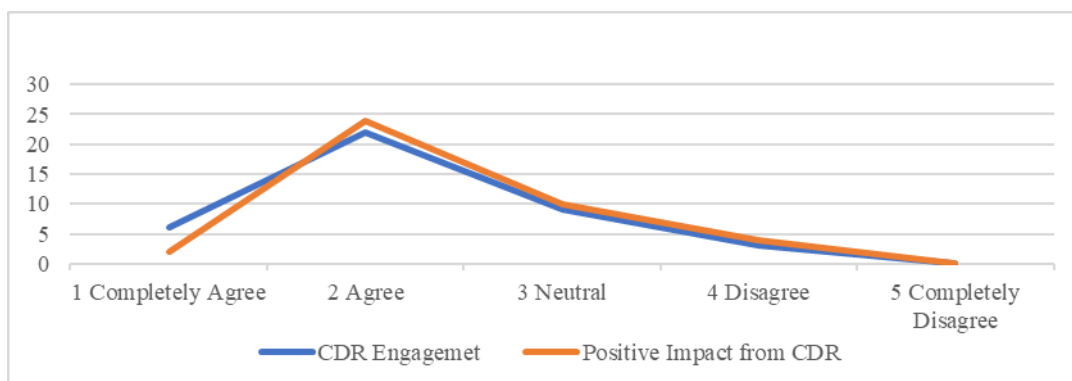
The last framework rated the importance of the different CDR categories derived from Wade (2020). No company saw the economic dimension as unimportant but it was also the one with the least companies rating it as very important. Social and Environmental CDR was rated similarly with Environmental CDR being unimportant to 7.5%. Technological CDR was rated as (very) important slightly more often than the other categories but also as unimportant for one company.

Figure 13: CDR Categories



The last two questions of the survey focused on the CDR implementation and engagement within the company and the expectations of a positive impact from CDR. Looking at the line graph of both questions one can see that the agreement was almost similar for both questions.

Figure 14: CDR Engagement and Impact



**Cross-sectional:** Companies that are *Compliant* or *Business Centered* with regards to their current stage of sustainability did not (completely) agree to being engaged in CDR, neither did they expect a positive impact from it. When comparing this to the agreement of sustainably active firms, being rated as *Regenerative* or *Coevolutionary*, everyone (completely) agreed to being engaged in some form of CDR, whereas the positive impact on business performance was (completely) agreed on by everyone as well.

## 4.2 Results of the Interview Analysis

Out of all 120 contacted individuals, two validated the survey and seven agreed to an interview. After a few interviews, a certain saturation with similar answers was noticeable which is also displayed in the following results. As the interviews were based on the quantitative

data of the pre-filled survey, the results of the qualitative interviews are structured accordingly. Hence, not every finding from the interviews is examined here. Moreover, a table with the coding guidelines can be found in Appendix 7.

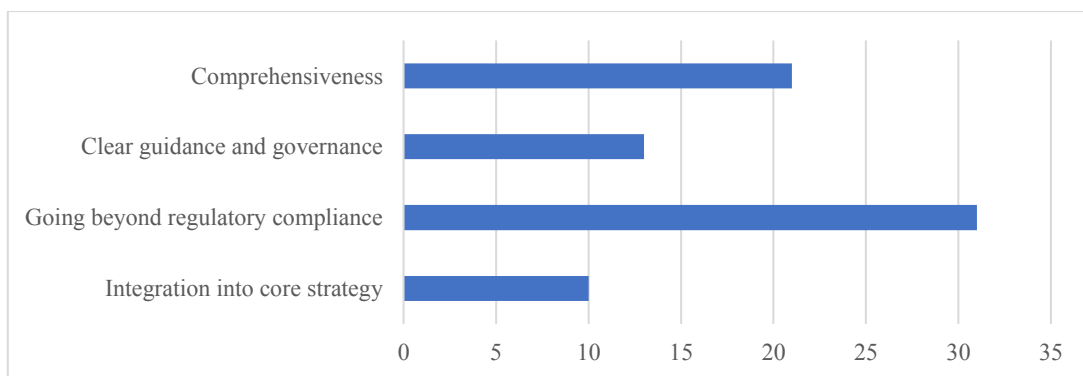
The different key elements of CDR, which are based on Yokoi et al. (2023), were all named regularly by different interview respondents. The importance of (CDR) **integration into the core strategy** was mentioned by five out of seven interview respondents. Some examples are: *“CEO talks the most about the importance of having a holistic approach”* (Interview-1, para.5); *“CDR would probably be more core business than CSR.”* (Interview-7, para.16-17); *“You're in a very good position if it's integrated into the company's DNA and processes as early as possible - because now you're building it up.”* (Interview-7, para.27). The second element of **going beyond regulatory compliance** was the most mentioned key element, e.g.: *“We are at a really interesting tipping point between nice to have and now it's sort of moving towards must have (...).”* (Interview-1, para.13).

In this case there were different opinions on the regulatory topic. Some were more positive: *“The company should voluntarily assume responsibility in the digital transformation and shape digitization in such a way that it serves the good of people.”* (Interview-3, para.2) and some more negative: *“(…) it makes the implementation of new technologies and new ideas somewhat more difficult.”* (Interview-2, para.23); *“(…) you will get regulations in 3 or 4 years' time at the very latest that are going to kill your business.”* (Interview-6, para.14). It was also mentioned that the key driver for going beyond compliance are customers: *“The risk is that you will be left behind, that is, in business terms, because more and more customers are attaching more importance to this (...).”* (Interview-4, para.12). Three respondents also mentioned a need for regulations instead of a voluntary commitment beyond compliance to enhance CDR implementation, e.g.: *“There's going to be attitudes from those companies who will say, well, you know what? If we're not getting any regulation, let's not go in and ask for it.”* (Interview-6, para.14).

An additional aspect mentioned was the question of **who is responsible for CDR**, which is connected to the key element of **clear guidance and governance**, e.g.: *“(…) if you don't yet have a CSR or CDR person or team - Why not make an informal team of colleagues who care about the topic.”* (Interview-1, para.13); *“Ultimately, it is a cross-cutting issue. You have to have someone who coordinates it.”* (Interview-3, para.26); *“None in particular. It's currently every department in our company a little bit.”* (Interview-4, para.18); *“So for us, in the broadest sense, it's more on the compliance issue. That's a separate area.”* (Interview-5, para.11).

Lastly, the element regarding the **comprehensiveness of CDR for all stakeholders** was mentioned. Specifically **internal** stakeholders (employees) were mentioned 15 times e.g.: *“These are just sort of topics that we're starting to talk about internally at XXX. We haven't actually changed anything yet. The reason is the awareness for this.”* (Interview-1, para.10); *“(…) most important thing is simply to convince the management or the board of directors that this is a good thing for such a company. Without that, it won't happen if someone sits up there and says we won't do another report. Then the issue is off the table for the time being.”* (Interview-3, para.22). Additionally, **external** stakeholders were mentioned as important six times e.g.: *“(…) implementing the whole thing from the company's point of view, but also of involving people. That means first and foremost involving customers and employees.”* (Interview-3, para.2); *“CDR can help align stakeholders.”* (Interview-7, para.19).

Figure 15: Key Elements of CDR



For the CDR categories according to Wade (2020), four codes were created. The first is **economic** CDR, where the financial perspective was specified: *“(…) for that to happen, it needs a massive shift at the roots of capitalism.”* (Interview-1, para.25); *“There is always CSR/CDR vs. profit at the moment.”* (Interview-2, para.15); *“So, there are challenges that XXX are going through with regard to economic cuts and job losses and things like this. However, on the sustainability environmental front, there have been no reductions in intentions to continue what we're doing.”* (Interview-6, para.2). Economic CDR also includes ethical considerations regarding the responsible change in the job market due to technologies, which was mentioned six times: *“(…) there is also a danger of implementing these technologies - not the CDR topic in general - in order to make work performance more efficient in the short term and perhaps also to replace one or two employees cost-effectively through technology.”* (Interview-2, para.17); *“(…) you transfer the transparency of the data directly to the employees and that they*

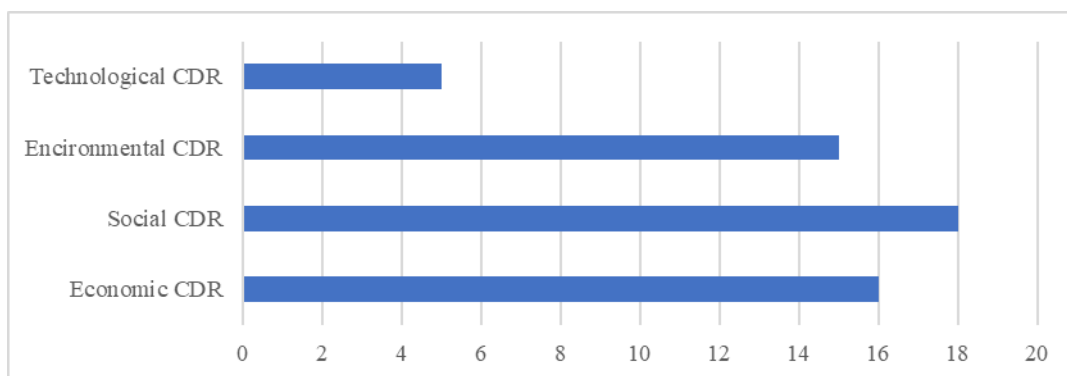
*then begin to understand this and organize themselves from it.” (Interview-4, para.6); “Of course, if for example jobs are replaced by AI - then I see the point.” (Interview-5, para.13).*

Next, there is the **social** category which was mentioned with different associations such as: *“You can't take the social aspect out of the equation. There's something else that XXX has been really progressive about. A more sustainable tech sector has to be one that resembles society more. There aren't enough women in tech and there aren't enough minorities in tech.” (Interview-1, para.19); “(...) it's the topic of "Legal But Harmful", so you say okay, there are certain things in the area of handling data, we could do that, it's even legal. But the question is, in the end, aren't we harming ourselves by doing so? It's about the ethical dimension, to say that we don't do everything that can be done.” (Interview-3, para.10) and “It's extremely hard for companies like XXX and XXX to say that they're engaged in digital responsibility when they're continually re-upping, re-upping their products for people to buy new products” (Interview-6, para.12). Additionally, the **training and education of employees** was mentioned, e.g.: *“So there would certainly have to be training for the staff through the CDR initiative” (Interview2, para.17) or “(...) we now sensitize our employees to topics like ethics or something like that, (...)” (Interview-3, para.12).**

**Environmental** CDR was mentioned in the context of energy consumption, carbon footprint or recycling: *“Starting with our data centers we only use renewable energy. And that's been the case since 2017.” (Interview-1, para.5); “There is also the issue of greenwashing. I believe that if the right resources and technologies are used in the right place, there could be a significant improvement in CO2 output and the burden on the environment and society could be significantly reduced.” (Interview-2, para.17); “(...) we have about 3,000 to 4,000 computers out there, of course, which also consume electricity, simply every day. And that means making sure that the individual devices we distribute are relatively energy efficient.” (Interview-4, para.8). Some other examples were software issues: *“If you consider XXX, for example, the actual software weighs about 200 times heavier than it did 25 years ago. But I mean, is it 200 times better? I don't think so. It's just been coded in a way that is really heavy and it's the same goes for websites.” (Interview-1, para.8) or the lifespan of technology: “So, we can prolong their lives for up to ten years. The industry average is about 3 to 4. (...) also, we recycle about 80% of their components. So, we're really focused on optimizing hardware because we know that of all that digital impact I was talking about, hardware is one of the biggest impacts.” (Interview-1, para.8).**

Lastly, **technological** CDR was mentioned, especially with regards to the ethical use of AI: “(...) Really anybody who tells you that they know how AI is going to affect digital responsibility is either misleading you or they don't know what they're talking about because it is such a massive gaping hole of we don't know very much.” (Interview-6, para.12) or the influence of regulations on AI: “Let's ban it. Well, this is not going to help innovation. Um, but at the same time I can understand the impulses to actually not allow stuff that you don't know enough about.” (Interview-6, para.14); “It's just totally dangerous, because if we impose regulations on ourselves, then it can happen very quickly that we lose the competitive advantage and then some insurance company from the US or from outside the EU comes along and says "hey, we can do it for half the price now, because we do other things that are forbidden in your country".” (Interview-7, para.25).

Figure 16: CDR Categories



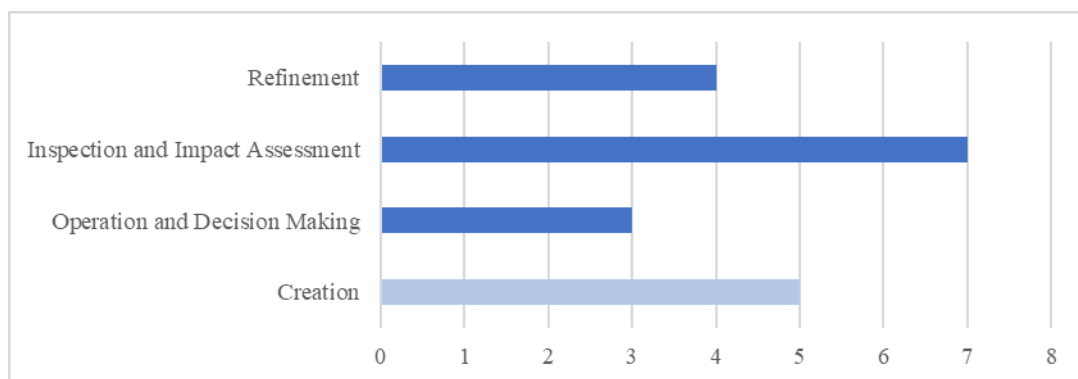
Regarding the *Basic Conceptual Constituents* of Lobschat et al. (2021), the first element of “**creation**” was already named multiple times throughout the context of **ethical considerations** in the social dimension of the previous framework or the topic beyond compliance when talking about actions that are legal but still ethically incorrect.

“**Inspection and impact assessment**”, which focuses on the importance of **transparency**, especially with regards to the usage of customer data or unintended consequences was mentioned by 6 out of 7 respondents, e.g.: “(...) beyond we do communicate very clearly if something goes wrong, if there is a sort of a server goes down or a sort of data privacy related worry, then we will communicate it very transparently and we will we update clients in real time and once it's all sorted out, publish a blog post saying this happened, this is how we fixed it.” (Interview-1, para.7); “Yes, the issue of transparency. Traceability of decisions is, of course, right at the top of the list.” (Interview-7, para.21). One respondent saw transparency with

regards to CDR as rather unimportant: *“Corporate Digital Responsibility would not help us if we have a disruption. It won't help us, because that is one of our basic functions, that everything is of course always available in the data center”* (Interview-5, para.9).

Another new element introduced by Lobschat et al. (2021) is **“operation and decision making”**, which was named by different respondents in the context of **constant monitoring**: *“And these are subject to a very clear framework, they have to be reviewed regularly, (...)”* (Interview-3, para.12). Lastly, **“refinement”** was named in the context of **long-term consequences**, e.g.: *“But for that to happen, it needs a massive shift at the roots of capitalism. (...) Now there needs to be some sort of acceptance that that's not a sustainable way to run the economy and that we need other KPIs to see if we're doing well or not. If we only grow 0.5% but we consume 40% less energy, then that's for me, a far better result.”* (Interview-1, para.25); *“When will who wake up? (...) If you look now at what has happened in the last few months and this whole artificial intelligence issue here. The events are coming thick and fast and I think we need the know-how and expertise to use these things in a targeted way”* (Interview-2, para.27); *“So tech has to wake up to this and engage very constructively.”* (Interview-6, para.14). Generally, the particular elements of the model of Lobschat et al. (2021) were not mentioned as often as the elements of Wade (2020) but the overall importance is given by the named interview examples.

Figure 17: Basic Conceptual Constituents of CDR

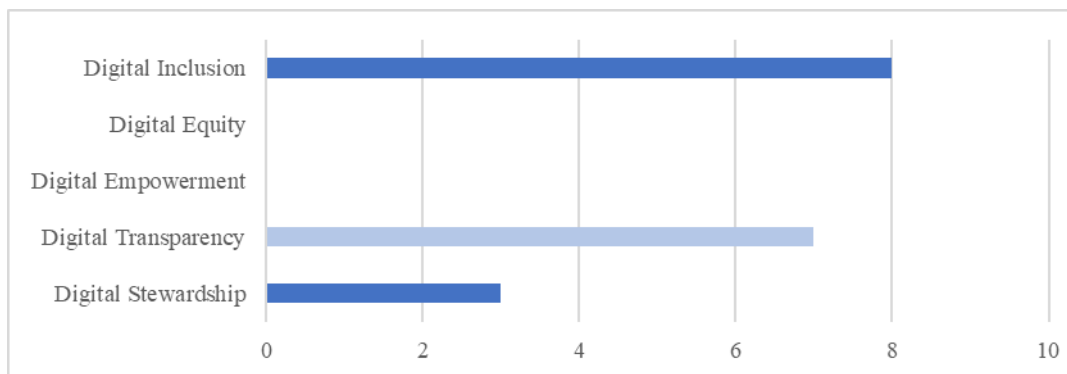


Next, the areas of application for CDR were partly named. Similar to the before observed elements, these overlap with previously mentioned elements and therefore are only briefly named. Starting with **digital stewardship**, where several passages of different interviews can be coded: *“Dealing with data is, that is quite clear, the hardest part of reporting, (...)”* (Interview-3, para.18); *“(...) the topic of how data is made available, that everything is*

*somehow becoming much more centralized and that you simply have much more at your disposal.*” (Interview-4, para.6). The topic of **digital transparency** was already mentioned in another context, whereas the areas of **digital empowerment** and **digital equity** are newly introduced but were never mentioned within the interviews.

Lastly, **digital inclusion** was mentioned, e.g.: *“But especially here in Germany, small and medium-sized enterprises and individual entrepreneurs, small craftsmen, are a huge basis for economic success. They could benefit immensely if large companies passed on their know-how in this area. So that the general economy can benefit from it, i.e., also smaller companies, etc.”* (Interview-2, para.15); *“(…) exciting thing for us, of course, is to sit down with companies from all sectors (…) to get ideas from other areas, where companies might look at a topic in a completely different way. (…) approaching the topic in a somewhat open-minded way (...)”* (Interview-3, para.20); *“(…) there's another challenge there, which is you're going to have to deal with a lot of competitors who will not want to be in the same room”* (Interview-6, para.14).

Figure 18: Areas of CDR Application



The connection of CSR and CDR was mentioned 13 times, indicating an **influence of sustainability on CDR**. Some companies are already trying to include CDR and see sustainability or CSR as a foundation.: *“Of course, there is still a relatively large focus on environmental issues, but I think that we are basically trying to include all other aspects much more.”* (Interview-2, para.27); *“(…) the key business driver for XXX is not just digitization or clock speed or things like this. It's actual impact on the environment and it's carbon footprint.”* (Interview-6, para.4). Others do currently not want to expand their strategy further: *“For us, the focus is on CSR.”* (Interview-5, para.3).

Lastly, the topic of a **future vision for CDR** was discussed with different conceptual ideas: *“I hope it will disappear. And I mean that not in a “I hope it will go away”. I hope it (CDR)*

*will be sort of diffused in the values of every company that no team will be able to do something unsustainable.” (Interview-1, para.23); “On a political level, it will remain voluntary and the goal of the initiative is to get new relevant companies to join in and thus to keep expanding the circle and perhaps also to get a certain pressure in the market at some point, to say you actually have to be there as a company, especially if you have a digital focus or something.” (Interview 3, para. 30); “So if it's possible, definitely take CDR into account as early as possible and always include it (...)” (Interview-7, para.27).*

### **4.3 Discussion**

The data indicates that the overall CDR engagement among technology-focused companies is low but the companies which already engage in CDR activities see the positive impacts it could have. Furthermore, digital responsibility is important for every individual but companies have a greater obligation to improve social and environmental conditions. Therefore, CDR is the next voluntary commitment to be embedded in every company as a guiding structure on how to responsibly create and use digital technologies.

***The challenges of CDR implementation:*** The literature on CDR does not provide a complete picture of how to implement CDR despite its urgency. Therefore, many challenges and questions arise, also during the interviews.

Starting at the **awareness** of the topic, which is currently very low due to its novelty. Hence, the question of **why** it should be implemented arises, especially because CDR implementation is a **new cost factor** which needs to be backed by the management and other stakeholders equally, according to the literature and the interviews. This requires a shift in management mindset from an economic focus to overall responsibility. Another challenge is the urgency created by the **fast-changing digital technologies** and innovations that make it difficult to keep up with the pace.

The question of **where** and **how** to implement CDR regarding application areas or touchpoints was also one of the key challenges identified in the survey and mentioned in the interviews as well as the question of **who is responsible for CDR** within a company. The survey results indicate that smaller companies see the responsibility with the management, whereas larger companies rather see it with the CSR department. Many companies do not have a specific department for it or would place the topic with other departments such as compliance.

In addition to economic factors such as cost, environmental (regulatory), social and technological factors, especially ethical considerations, present challenges that can be addressed through the strategic change of CDR implementation.

The interview results indicated that it is most important to have a person or a team which is enthusiastic about the topic and willing to spread awareness. This is also how the *CDR Initiative* was implemented within the first pioneering companies. These challenges can be addressed by looking at different key elements derived from the literature or the interviews and validated by the survey and interview results.

***The key elements of CDR implementation:*** When comparing the different theories of CDR implementation, it stood out that there are some general key elements for the implementation of CDR based on the challenges. The latest publication of Yokoi et al. (2023) provides a good starting point with four key elements, which were named in the literature and multiple times by different interview partners. Therefore, the following key elements provide the basis to CDR implementation but are adapted and expanded to include new factors:

***Integrating CDR into the core strategy:*** This element includes overall awareness of CDR and implementation into the company's norms, values and vision. Especially for technology focused companies CDR can be easier to implement into their core strategy, due to a better fit, than CSR. According to the interview results, it can lead to a competitive advantage to adapt this strategy early. However, economic profits are still core to most companies, which makes it difficult to implement CDR due to the costs of implementation. Similar to CSR, there must be a balance between economic growth and sustainable behavior. Therefore, CDR is often only partially implemented and not connected to the organizational core yet. Leading examples of successful CDR implementation are companies following the *CDR Initiative*.

***Going beyond regulatory compliance:*** This topic was discussed in every interview with different opinions. According to the literature, CDR is per definition, similar to CSR, a voluntary commitment which should go beyond compliance. The same also applies to **digital ethics**, which can be seen as a basis for CDR. This goes back to the *CSR Pyramid* where economic stability is the base, followed by compliance with laws and regulations. Ethics builds on this because not everything legal is ethically correct. Moreover, some respondents were in favor of regulations, saying that without them, CDR will not be implemented in the near future and that laws and legislation are a necessary burden. Others said that it should rather be driven

by a few innovative early adopters of CDR who create pressure in the market for others to follow. Companies engaging in very innovative technologies, such as AI, are afraid of regulations as they are a threat to their business model by hindering innovation. Nevertheless, most said that regulation can help accelerate the overall process of implementing CDR but only if it does not restrain innovation. Another key driver for going beyond compliance cited in the interviews is customers demanding responsible behavior through a shift in mindset towards responsibility and sustainability. Hence, this shift is also necessary within a company.

***Clear guidance and governance:*** According to the literature, communication is especially important in overall management, leadership and governance and can be the basis to justify structural changes through CDR. Hence, the question of **who is responsible** for CDR is essential to implement this new strategic change. In the interviews, respondents said it was either implemented by dedicated and self-motivated individuals, volunteering teams or adapted by departments specializing in similar tasks, such as CSR or legal, which now deal with the responsible implementation of digital technologies.

***Comprehensiveness of CDR to all stakeholders:*** According to the literature, the focus should be on internal stakeholders to provide employees with trainings and explanations towards CDR and the responsible interaction with digital technologies, e.g., the handling of data. Many interview respondents said that a big challenge is internal awareness among employees. Due to a shift in the mindset of customers, who increasingly demand responsible firms, explaining all actions to external stakeholders such as the government, local communities and shareholders is evenly important, as stated by the interview respondents. Furthermore, the need for management to support the change to CDR was also mentioned as important, mainly because they have to deal with the financial funding of the implementation.

Aligning different stakeholder expectations such as ethical use of AI and data protection beyond compliance through CDR was one of the main takeaways of the interviews. Within the context of responsible innovation, stakeholder engagement was named first as important since it can lead to a positive impact on society through early identification of negative effects. Hence, individuals, organizations, governments as well as artificial or technological actors should be evenly included in the whole process of implementing CDR in order to explain **why** it can create value.

These four key elements did not include the question of **how** and **where** to implement CDR. Therefore, another key element focuses on having a **holistic approach** of including different dimensions connected to CDR. According to the survey and interview results, the dimensions

of Wade (2020) are most comprehensible, important and complete. This is caused by these four categories being based on the TBL, which is familiar to many companies. The key element of having a holistic approach and including CDR in a company's core is therefore seen when implementing all dimensions of the TBL (economic, social and environmental) plus technological CDR, similar to fully integrating CSR. Examples for economic CDR named during the interviews are a responsible change in the job market in case of replacements through technology. For social CDR different ethical considerations as well as the importance of inclusion and diversity or the education of different stakeholders was named. Furthermore, environmental CDR was the category where each company had ongoing initiatives, such as energy-saving innovations or responsible recycling. The additional dimension of technological CDR was named less often than the other three dimensions during the interviews due to its novelty. But the fact that issues like ethical AI were even mentioned shows the need for this addition. Hence, a holistic approach, following a detailed definition including key elements is essential according to the interview respondents and the literature.

To counter the fast-changing environment of digital technology, **constant monitoring** was an important topic in the survey and especially during the interviews. This is theoretically based on "**operation and decision making**" by Lobschat et al. (2021) and was only mentioned a few times during the interviews but as being "very important". It also creates urgency for CDR and is connected to the challenge of **when** to implement it.

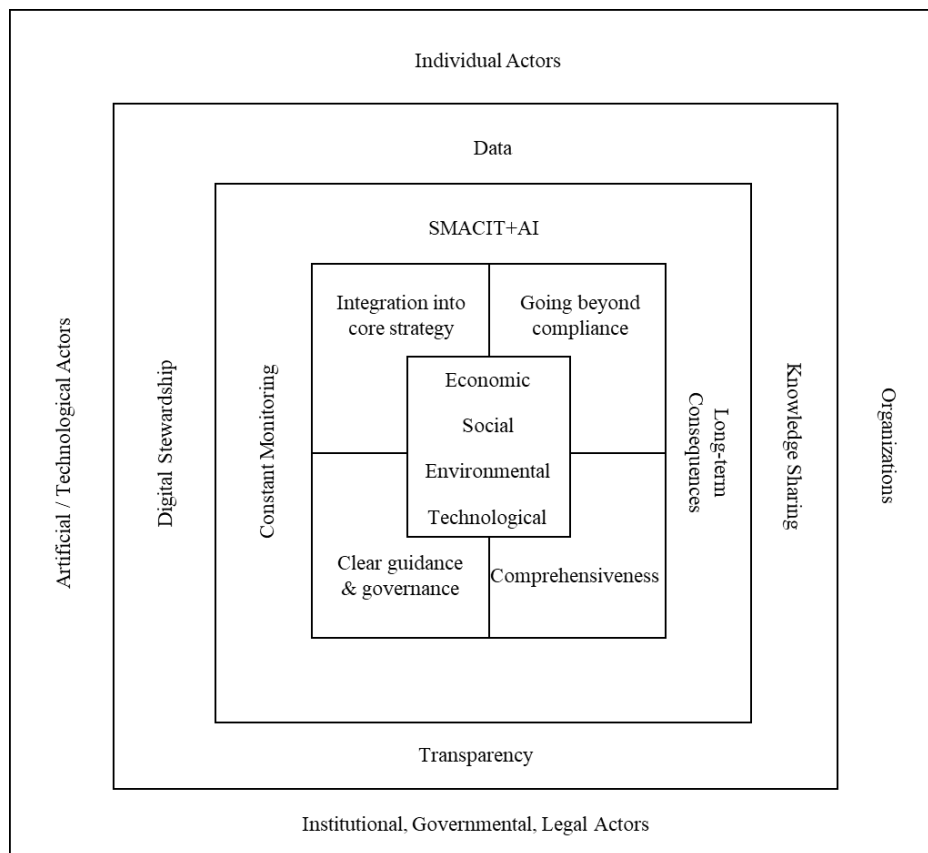
The same applies to "**refinement**" which was described as **long-term consequences** of digital technology use. According to the interview respondents, change regarding the implementation of CDR has to happen in a timely manner in order to prevent negative consequences in the long-term. "**Creation**" or general ethical considerations are implemented in every individual category of the holistic integration mentioned above. Nonetheless, "**inspection and impact assessment**" or **transparency** is according to the literature, the interviews and the survey one of the most important aspects. As transparency is already required by law to a certain extent, one interview respondent said that CDR would not be beneficial in this case. Therefore, as suggested by the literature, it is especially important for a company to have a management that supports CDR and communicates the reasons behind it transparently to all stakeholders in order to create value from going beyond compliance. A transparent explanation of what needs to be done sets the foundation for a successful CDR implementation. These two elements can be connected to the theoretical context of responsible innovation as both are based on the dimension of *anticipation*.

At the areas of CDR application of Brink et al. (2020), it was “**digital stewardship**” which was rated as “(very) important” by all companies. This finding was validated within the interviews by underlining the importance of responsible handling of data. Additionally, “**digital inclusion**” was named numerous times within the interviews regarding the importance of **knowledge sharing**, which is another important aspect of CDR. Working together across industries and providing each other with data and best practices is essential to improve and evolve CDR. But this also includes the challenge of potentially sharing data or information with competitors in order to create value from knowledge sharing.

The categories “**digital equity**” and “**digital empowerment**” were never mentioned within the interviews and also in the pre-filled survey they did not particularly stand out. This does not mean that they are not important but they are rather integrated in other categories. The same applies to “**digital transparency**”, which was mentioned before. Empowerment can be seen in the scope of digital inclusion and sharing knowledge also with customers and equity in the broad aspect of ethical decision making when using data.

Some challenges or key elements are perceived as more important than others by different companies. Therefore, a first approach to CDR should only include the most important aspects to the individual firm in order to not discourage anyone from trying to implement CDR. In consequence, the theory can be synthesized with the survey and interview findings in order to create an overarching model, which gives a more detailed view to fully implement CDR. The model is based on the different stakeholders named by Lobschat et al. (2021) which have an influence on or are influenced by CDR. One of the most important aspects is the handling of data, where digital stewardship and knowledge sharing are important aspects next to overall transparency. When implementing other SMACIT+AI technologies, a timely aspect of constant monitoring and long-term consequences is important. Next, the four presented key elements which apply to the overall CSR implementation into the core strategy are displayed, followed by the holistic integration to the company’s economic, social, environmental and technological factors. Lastly the importance of different aspects varies for different stakeholders. From a legal perspective, transparency is most important whereas for organizations, knowledge sharing can create a high value and positively influence long-term consequences. Lastly, when AI or technological actors are involved, the responsible handling of data is most important (digital stewardship) alongside constant monitoring.

Figure 19: CDR Implementation (Own Illustration)



**The influence of sustainability and CSR on CDR:** All interviewed companies have already tried to address challenges of CDR by implementing at least a few of the mentioned key elements within their CSR or sustainability initiatives. Hence, the research indicates that CSR or sustainability efforts have a positive effect on the implementation of CDR because it can serve as a leading example on how to integrate CDR successfully. Furthermore, digital technologies can be leveraged to be a crucial part in reaching sustainability goals. This is achieved with different technologies such as saving resources by using cloud technologies or making old machines or production facilities smarter with software or IoT solutions. When looking at the stages of sustainability the trend shifts from a major part only weakly integrating sustainability and focusing on compliance to strongly integrating sustainability efforts, which goes beyond compliance nowadays and especially in the future. This shift has been slowly improving for a few years and is predicted to be increasing even more according to the interviewed respondents.

***The future of CDR:*** To date, there are only scattered laws and regulations on specific areas of CDR such as data protection (GDPR). The research indicates that an overarching regulation to make CDR more transparent and comparable to mandatory CSR reporting would help to ensure widespread implementation of CDR and raise awareness of the topic. The ongoing CDR programs can help to increase awareness and provide the necessary guidance but currently they do mostly stay within their regional areas. Furthermore, there are contrary opinions on whether regulations or laws can help to promote this topic or rather hinder innovation by restricting the development of, for example, AI. Lastly, according to the interview respondents, the expectations and mindsets of customers and (potential) employees towards responsibility, embedded in a company's culture, change. This increasing awareness can create pressure for implementing internal guidelines in the area of sustainability and digital technologies, without the need for laws but with the same positive effects.

## 5. Conclusion

Digital technologies are incremental and could possibly be a part of the solution to many man-made problems regarding the environment, society and economy. Therefore, CDR can be one of the most valuable new strategies to use digital technologies responsibly, when implemented correctly. Moreover, as the potential risks of each technology alter much, universal guidelines could help to implement these technologies in a more responsible manner.

### 5.1 Main Finding

*RQ1: What are the challenges of CDR implementation?*

There are several challenges preventing CDR from being broadly implemented, despite its perceived urgency due to fast innovations in digital technology. The biggest challenge is the low awareness of the topic. Hence, it must be explained why it is important. Furthermore, most companies are afraid of the costs and therefore management needs to be convinced of possible value creation from implementing CDR. This leads to the need for a responsible person or team to advance the topic internally as well as more initiatives to promote it across industries. Lastly, a lack of guidance and structure on what, where and how to implement CDR is a necessary challenge to overcome in order to successfully implement CDR.

*RQ2: What are the key elements of CDR implementation?*

Throughout the research, several key elements of CDR implementation were found. CDR should be integrated into the core strategy, specifically into the company's culture. Clear guidance and governance as well as comprehensiveness of the strategic change to all stakeholders is the basis to go beyond regulatory compliance with the integration of CDR. Additionally, having a holistic approach of integrating CDR on all dimensions of the TBL as well as taking technological factors into account, is important to create value from this strategic change.

Engaging with different stakeholders is also of high importance. Especially when working with or using artificial or technological actors, the responsible use of data (digital stewardship) as well as constant monitoring is important. Moreover, governmental stakeholders demand transparency in the overall use of digital technologies. Lastly, organizations benefit most from knowledge sharing through CDR while working together within and across industries while sharing the goal of positive long-term consequences.

Implementing these key elements into the CDR strategy covers most challenges. Furthermore, best practices can be found at the pioneering firms of the *CDR Initiative*. When

all key elements of a successful CDR implementation are respected, companies can create value on all dimensions of the TBL and become even more successful while being digitally responsible.

*RQ3: What is the influence of CSR and sustainability measures on CDR?*

Sustainability and CSR provide the basis for companies to implement CDR as many challenges and key elements are similar. Especially the shift in mindset towards sustainability and CSR, which has happened over the last years, has to be transferred to CDR to further advance the topic. Additionally, CDR can also have an influence on CSR as the responsible integration of digital technologies can be beneficial to reaching environmental goals as well as benefiting society while being economically successful.

*RQ4: What could the future of CDR look like?*

The research indicates that CDR implementation will be important in the future. Only the way of implementation is unsure. It could remain a voluntary commitment by creating new business opportunities for pioneering companies, which would lead to market pressure caused by the shifted mindset of external stakeholders towards responsibility. Alternatively, laws and regulations could lead to a forced implementation of CDR, similar to CSR, through specific reporting requirements. But this would lead to new challenges which can restrict innovation, making it an unfavorable option, according to the interviews.

## **5.2 Managerial and Academic Implications**

CDR could be an opportunity for businesses to further develop towards a more responsible part of society. Besides being compliant, this leads to new business opportunities by appealing to a new audience such as customers and employees who strongly emphasize sustainability and responsibility of companies.

Hence, organizations should quickly start to implement CDR into their core strategy to gain a competitive advantage by going beyond compliance and creating value from a holistic implementation of CDR. Creating awareness for the topic will also benefit companies through knowledge sharing and the refinement of guidelines and structures to constantly evolve the implementation of CDR. The challenges, key elements and structures displayed in this dissertation can be a starting point for further research on this novel important topic.

### **5.3 Limitations and Further Research**

As the goal of this dissertation is exploratory research on the new topic of CDR, the described approach is suitable. Nevertheless, there are limitations to it. While pre-filled surveys exclude favorability bias, which is the tendency to have a positive view on the own company, sending blank surveys to companies could lead to different findings. Moreover, many contacted persons who work in the broad field of digital responsibility are currently not available because different reports are due in June, which made the timing for research very complicated and led to possible interview respondents canceling last minute. In a longer timeframe, more interviews and validations would have been possible as well as a deeper statistical analysis.

Further research could be conducted by collecting larger quantitative data sets about companies, looking for specific CDR characteristics in order to research the current status of implementation and statistically validate the findings of this dissertation. Additionally, the sample could be further expanded across industries, because CDR will in the future apply to almost every industry due to digitalization.

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## Appendices

### Appendix 1: Sustainable Value Framework

In order to make CSR more feasible and the implementation of CSR efforts in companies easier, the “**Sustainable Value Framework**” by Hart and Milstein (2003) can be used, which explains how companies can create value from solving sustainability issues. The framework consists of four dimensions which can be used to create new firm strategies that could decrease risk and expense (*Pollution Prevention*), increase the firm’s credibility (*Product Stewardship*), promote restructuring and development (*Clean Technology*) and define development trends of the company (*Base of the Pyramid*). The four categories are:

*Pollution prevention*: Reducing the carbon footprint and other waste from present activities and facilities.

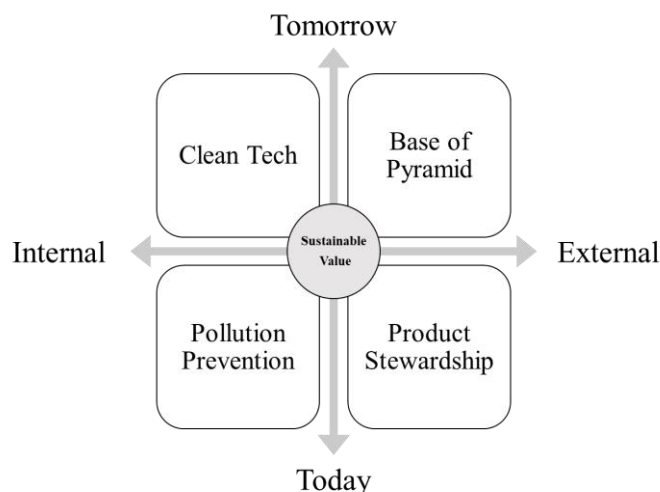
*Product stewardship*: Involving stakeholders and managing a product's whole life cycle.

*Clean technology*: The creation and use of modern, renewable and sustainable technologies.

*Base of the pyramid*: Jointly creating new businesses to meet the unsatisfied needs of the deprived and underprivileged.

These categories are divided into internal and external activities as well as divided in nowadays` and future happenings (see figure 20)(Hart & Milstein, 2003). With the introduction of clean technology as one dimension, the first connection to sustainable digitalization is presented.

Figure 20: Sustainable Value Framework (adapted from: Hart & Milstein, 2003)



## **Appendix 2: Stages of Sustainability**

*Compliance* (Very weak): On this stage, the focus lies on the financial success of the company while following laws and regulations. There is no intrinsic motivation to work towards sustainability goals of the TBL (Van Marrewijk & Werre, 2003).

*Business-Centered* (Weak): Here, the focus is still very much on the firm's success and human-centered but with a slight intention on causing less harm towards economy, society or the environment. In this stage, sustainable responsible projects are only pursued to gain economic benefits for the firm such as the creation of new environmentally friendly products for this growing market segment (Nidumolu et al., 2009).

*Systematic* (Intermediate): Sustainability is defined within the firm as positively contributing to the TBL. The company tries to collaborate with partners to assist the systematic transformation of the industry. The focus is still within the company's economic scope and human centered and especially projects are chosen which can also bring economic value to the firm such as energy efficiency or waste reduction (Landrum, 2018).

*Regenerative* (Strong): At this stage, there is an active engagement in projects outside of the firm's economic scope with the aim of restoring previous destruction. The focus tilts towards external stakeholders such as the environment and society with more sustainable growth strategies (Landrum, 2018).

*Coevolutionary* (Very Strong): A company at this stage has reached an "ecocentric" view, being at the same level as nature which puts all resources towards the management of larger systems and a healthy state of all TBL dimensions (O'Riordan, 2002). There is no focus on growth strategies anymore and all resources are contributing equally towards the environment, the economy and society (Landrum, 2018).

### **Appendix 3: Details on SMACIT+AI technologies**

#### *1. Social Media (Social)*

According to Statista (2023), there are 5.16 billion internet users of which 4.76 billion use social media (Statista, 2023). The widely used term is defined as: “*Social media are Internet-based channels that allow users to opportunistically interact and selectively self-present, either in real-time or asynchronously, with both broad and narrow audiences who derive value from user-generated content and the perception of interaction with others.*” (Carr & Hayes, 2015).

#### *2. Mobile (Mobile)*

The mobile technology enables end users to access and use SMACIT+AI technologies in portable devices. For companies this is especially interesting as employees can work from anywhere and are always accessible. The same applies for other stakeholders, for example customers who can be reached through digital marketing campaigns, suppliers who can provide tracking data on the go and shareholders who can track the company’s performance at any time. All devices that are internet-capable can be considered mobile technology and additionally, devices that communicate via Bluetooth or GPS. The most important part of this technology is the used mobile network which can either be a Wi-Fi connection from a local router, a short-distance Bluetooth connection or a cellular network which is utilizing the cell tower network of telecommunication providers in its latest generation 5G (Ayyash et al., 2016; Mitra & Agrawal, 2015).

#### *3. Data (Cookies) (Analytical)*

Everyone who visits websites or uses other internet-based applications gets in contact with them. Either visibly by a website asking the user about the preferences of saved cookies or, depending on the local regulations, unconsciously. Cookies are used by websites to provide individual offers, specially tailored to the respective user, to remember account login data or recently looked at or purchased products (Greenberg & Long, 2003). Cookies are based on small text files which are saved with a unique ID that combines the IP address and the used device by the user. As soon as a user re-visits a specific website, the website can restore the cookies saved at the unique ID and with that provide individual content (Kristol, 2001).

#### *4. Cloud Computing (Cloud)*

Cloud computing represents the internet like no other technology and can be explained by shifting computing technology to the internet (Jaatun et al., 2009). Microsoft Azure, one of the biggest cloud computing providers defines it as: “*Simply put, cloud computing is the delivery*

*of computing services—including servers, storage, databases, networking, software, analytics, and intelligence—over the internet (“the cloud”) to offer faster innovation, flexible resources, and economies of scale. You typically pay only for cloud services you use, helping you lower your operating costs, run your infrastructure more efficiently, and scale as your business needs change.”* (Microsoft Azure, 2021).

According to Fox et al. there are several types of application for cloud computing such as mobile applications which require large data in real time, data analytics from several simultaneously working data centers which increases the computing power and the opportunity to do hardware intensive processing or analytics from a standard computer using the computing power of large data centers (Fox et al., 2009).

#### *5. Internet of Things (IoT)*

*“The words “Internet” and “Things” mean an inter-connected world-wide network based on sensory, communication, networking, and information processing technologies, which might be the new version of information and communications technology (ICT)”* (Li et al., 2015, p.244). Hence, the IoT can be explained as a network between physical objects and systems such as household items, cars, TVs or industrial machinery which are collecting and sharing data between each other via the internet by using sensors and software.

#### *6. Artificial Intelligence (AI)*

Since years, artificial intelligence and machine learning algorithms are used by millions of end users when conducting online research via search engines such as Google or when prices are automatically adjusted to an individual and the corresponding data available online. Hence, Artificial Intelligence is not a new concept and is only recently implemented through software such as ChatGPT by the US Company OpenAI, which makes it experienceable for the broad public. Since 2022, AI, more specifically large language models are changing the way people work, study or communicate and it is already impacting corporations across industries globally (Ahmed et al., 2022).

## Appendix 4: Pre-filled Survey



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### Invitation for a pre-filled survey within the scope of the master dissertation on the topic of “Corporate Digital Responsibility (CDR)”

The objective of the dissertation is to understand the drivers and barriers of CDR across various industries.

#### **SUBJECT: Corporate Digital Responsibility - Request for Research Participation**

#### **Preface**

Dear Sir or Madame,

We hope this message finds you well. As part of our master’s thesis at the Digital+Sustainable Innovation Lab at Católica-Lisbon, we (Niklas Angermann and Carlos Marengo) seek to uncover the opportunities, risk and implementation of Corporate Digital Responsibility and are looking for experts to participate in our survey. Our aim is to gain a better understanding of how companies use digital technologies and what impact this has on their responsibility towards society and the environment. Your expertise in the field of corporate responsibility would give our research highly valued insights.

We already studied [COMPANY NAME] with regards to its Corporate Digital Responsibility Efforts based on publicly available data and pre-filled the attached CDR Profile. It would be great if you could verify our research results. As there are still a few blind spots, it would be great if you could check the CDR Profile, adjust it where needed and possibly fill in parts we could not find online. As a participant, you will receive the results of the survey and thus benefit from the insights of other companies.

Please find attached the pre-filled CDR Profile and either approve it or adjust accordingly. Furthermore, it would be great if you would also have the time for a short 30-minute interview in which we discuss in person [COMPANY NAME] CDR efforts. Your expertise and insights would give us valuable in-depth knowledge. Nonetheless, we would already be grateful for your validation.

Thank you in advance for your support and feel free to contact us regarding further questions.

Yours sincerely,

Niklas Angermann & Carlos Marengo

**Problem Statement: Corporate Digital Responsibility – The next challenge for companies?**

The digital revolution has brought substantial changes to the way we work, interact and live with each other. However, this transformation has also led to an increase in environmental impacts and sustainability challenges. As a result, there is a growing interest in exploring the intersection between sustainability and the digital context (Helbing, 2015). The digitalization of our society in all areas has fueled the discourse on responsible corporate governance. There are increasing calls for an ethical shaping of digitalization from the political as well as the economic and social sides. The aim of these demands is to cushion the negative consequences of digitalization. The changes in the ethical concerns of society show that a normative examination of the topic is also relevant. This raises the question, especially for companies, of what corporate responsibility in the digital world, i.e., corporate digital responsibility (CDR), means in concrete terms (Thorun, Kettner & Merck, 2018).

*“Corporate Digital Responsibility (CDR) is a set of practices and behaviours that help an organisation use data and digital technologies in ways that are perceived as socially, economically, and environmentally responsible.”* (Price et al., 2021).

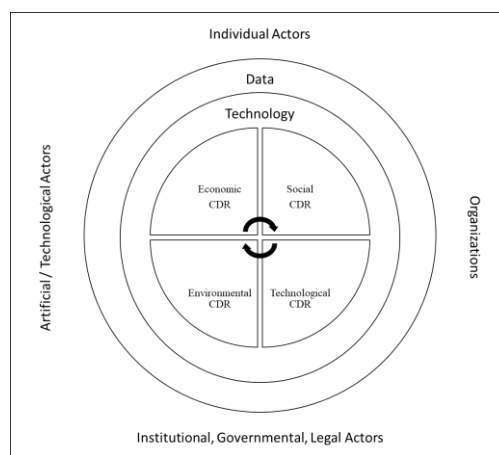


Figure 1: (Own illustration) Basic conceptual constituents of CDR, adapted from (Lobschat et al., 2021; Wade, 2020)

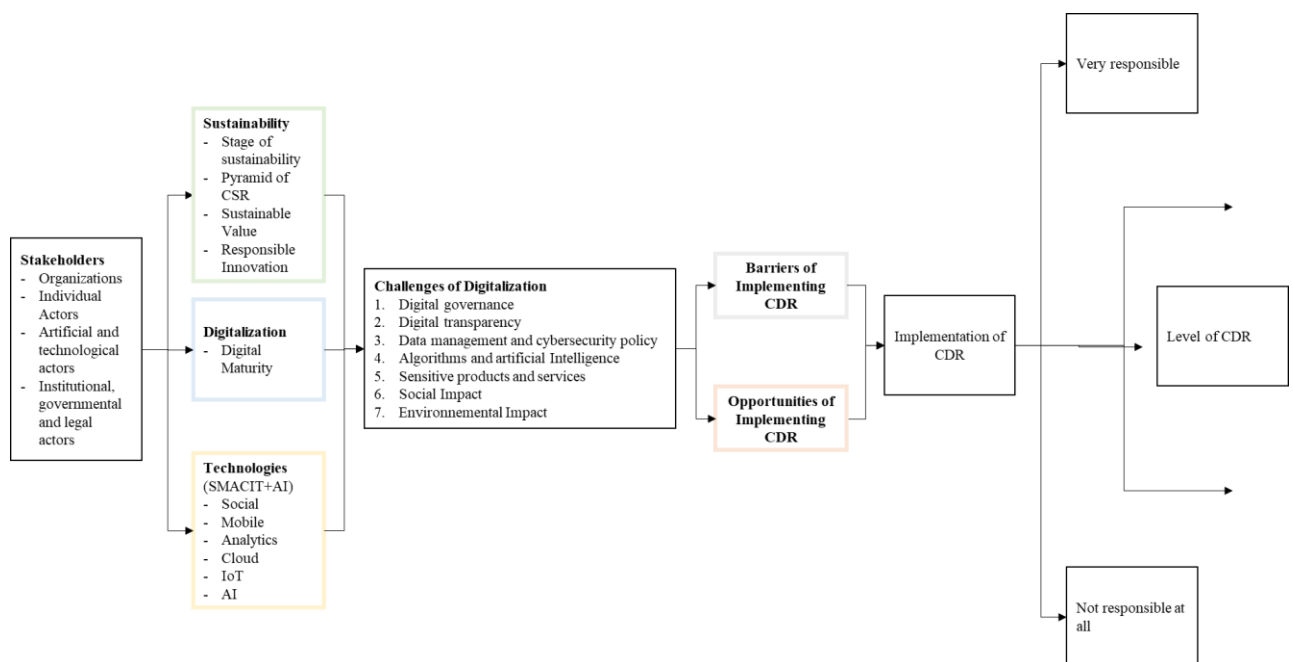


Figure 2: (Own illustration) Conceptual Model - Research Approach

<b>Subtopic 0: Company Profile</b>	
Date sent:	Click or tap to enter a date.
Date received:	Click or tap to enter a date.
Company Name:	Click or tap here to enter text.
Industry:	Click or tap here to enter text.
Target Customers:	Click or tap here to enter text.
Number of Employees:	Click or tap here to enter text.
Turnover:	Click or tap here to enter text.
<b>Subtopic 0: Interviewee Demographics</b>	
Name:	Click or tap here to enter text.
Position:	Click or tap here to enter text.
Age:	Click or tap here to enter text.
Highest educational degree:	Click or tap here to enter text.
Years of business experience:	Click or tap here to enter text.
Previous work experience:	Click or tap here to enter text.
<b>Subtopic 1: Sustainability &amp; CSR (15% Progress)</b>	
Does your company publish a CSR report?	Choose an item.
Rate the importance of sustainability in your company	Choose an item.
Rate your company's efforts to reduce negative sustainability impacts?	Choose an item.
Rate your company's efforts to promote ethical and sustainable behavior?	Choose an item.
Does your company implement new innovations by using a "trial and error" strategy or do you carefully plan in advance and compare risks and opportunities before?	Choose an item.
Rate the initial engagement of different internal stakeholders (different departments) when implementing new innovations.	Choose an item.
Rate the initial engagement of different external stakeholders (NGOs, experts) when implementing new innovations.	Choose an item.
Rate how agile your implementation process is and how flexible you are with feedback.	Choose an item.
At which stage of sustainability is your company: <ol style="list-style-type: none"> <li>1. <b>Compliance:</b> Focus on financial success and regulatory compliance.</li> <li>2. <b>Business Centered:</b> Economic well-being is the motivation and measure of success. Only small changes to daily business. Can focus on one or more dimensions of sustainability (economic, environmental, social)</li> <li>3. <b>Systemic:</b> Collaboration with other stakeholders to create systematic change on all three dimensions (economic, environmental, social)</li> <li>4. <b>Regenerative:</b> In addition to systematic change, there is a focus on healing, rebuilding and reinforcing the environment.</li> <li>5. <b>Coevolutionary:</b> Work in balance with the environment and contribute to a thriving nature.</li> </ol>	<p><b>When founding the Company:</b> Choose an item.</p> <p><b>Currently:</b> Choose an item.</p> <p><b>In the future:</b> Choose an item.</p>
<b>Subtopic 2: Digitalization &amp; Digital Transformation (35% Progress)</b>	
Rate the importance of each Technology for your business: <ol style="list-style-type: none"> <li>1. Social Media (e.g., Instagram)</li> <li>2. Mobile (e.g., Wi-Fi, 5G, Bluetooth)</li> <li>3. Data (e.g., Cookies)</li> <li>4. Cloud (e.g., OneDrive)</li> <li>5. Internet of Things (e.g., Smartphones)</li> <li>6. Artificial Intelligence (e.g., Recruiting)</li> </ol>	<p>Choose an item.</p> <p>Choose an item.</p> <p>Choose an item.</p> <p>Choose an item.</p> <p>Choose an item.</p> <p>Choose an item.</p>
From which technology do you create revenue?	Choose an item.

<p>What Stage of Digital Maturity is your company currently in and in what stage does your company want to be in the future?</p> <ol style="list-style-type: none"> <li>1. Your company only uses more traditional digital applications such as e-commerce or e-mail communication.</li> <li>2. Your company only tried a few ostensibly useful digital applications but without the strategic integration into the organization.</li> <li>3. Your company focuses on their core strategy and strategic innovations but avoids implementing speculative digital applications.</li> <li>4. Your company is aware of the chances that digital applications offer with respect to a competitive edge and therefore fully integrate the latest digital innovations into their strategy.</li> </ol>		<p><b>When founding the Company:</b> Choose an item.</p> <p><b>Currently:</b> Choose an item.</p> <p><b>In the future:</b> Choose an item.</p>
<p><b>Subtopic 3: Corporate Digital Responsibility (50% Progress)</b></p>		
Who is responsible for your company's CDR initiatives?		Choose an item.
If "other":	Click or tap here to enter text.	
Does your company publish a CDR report?		Choose an item.
Does your company have a code of ethics that guides its digital practices?		Choose an item.
How would you rate your company's transparency and accountability in its digital practices?		Choose an item.
How would you rate your company's efforts to avoid negative impacts of your digital technologies offerings and own usage?		Choose an item.
How would you rate your company's efforts to implement any initiatives to promote digital literacy and responsible use of technology among its customers?		Choose an item.
How would you rate your company's efforts to respond to ethical dilemmas related to digital technologies offerings and their impact on society?		Choose an item.
Rate the degree to which your company considers corporate digital responsibility while making performance relevant decisions.		Choose an item.
<p><b>Subtopic 4: CDR Opportunities (65% Progress)</b></p>		
Can companies only improve their sustainable efforts while worsening their financial performance?		Choose an item.
Rate the degree to which you feel, that being CDR compliant will give you:		
1. More revenue		Choose an item.
2. Less costs		Choose an item.
Rate how being CDR compliant increases your company's revenue through:		
1. Better Access to certain markets		Choose an item.
2. Differentiating products and sustainable offerings		Choose an item.
3. Early involvement of stakeholder		Choose an item.
4. Compliance with legislation changes		Choose an item.
5. A greater drive for innovation		Choose an item.
Rate how being CDR compliant decreases your company's costs through:		
1. Risk Management for image damage, compliance with set guidelines and human right violations		Choose an item.
2. Reduced costs for labor through higher employee satisfaction		Choose an item.
3. A better relationship with external stakeholders		Choose an item.
4. Better cost of capital		Choose an item.
5. Less Material and Energy Waste		Choose an item.

Which other opportunities do you see for your business when applying CDR?	Click or tap here to enter text.	
<b>Subtopic 5: Barriers for Implementing CDR (80% Progress)</b>		
<p>Rate these five touchpoints of CDR for importance in your company:</p> <ol style="list-style-type: none"> <li>1. Digital <b>stewardship</b> (responsible use of data through privacy and security)</li> <li>2. Digital <b>transparency</b> (transparency in the use of customer data)</li> <li>3. Digital <b>empowerment</b> (empowering customers through guidance)</li> <li>4. Digital <b>equity</b> (fair distribution of profits from the use of customer data)</li> <li>5. Digital <b>inclusion</b> (making data sets available for research)</li> </ol>		<p>Choose an item.</p> <p>Choose an item.</p> <p>Choose an item.</p> <p>Choose an item.</p> <p>Choose an item.</p>
<p>Rate the importance of the following statements to your company:</p> <ol style="list-style-type: none"> <li>1. <b>Ethical considerations</b> when developing a new technology or choosing an existing one from external providers is important.</li> <li>2. <b>Constant monitoring</b> of digital technologies to reduce the risks of outdated software, biased data or unethical development of autonomous behavior.</li> <li>3. <b>Transparency</b> towards users &amp; clients regarding unintended consequences, such as a <b>negative environmental impact</b> (energy consumption, etc.) and a costs / benefits analysis of them providing data (What do they get from sharing private information?) should be provided.</li> <li>4. <b>Long-term consequences</b> after the deployment or sale of the technology should be kept in mind. Guidelines for data security, storage and overall, after-sales support are needed.</li> </ol>		<p>Choose an item.</p> <p>Choose an item.</p> <p>Choose an item.</p> <p>Choose an item.</p>
<p>When looking at the following examples, please rate the importance of solving those challenges at your company:</p> <ol style="list-style-type: none"> <li>1. <b>Economic CDR</b>: Replacing jobs in a responsible way. Ensuring that outsourcing of work to is done in a responsibly. Respecting data ownership rights (e.g., by reducing piracy)</li> <li>2. <b>Social CDR</b>: Guaranteeing data protection for employees, customers and other stakeholders. Promoting digital inclusion. Pursuing morally decent practices.</li> <li>3. <b>Environmental CDR</b>: Including responsible recycling practices for digital hardware. Extending the digital technology life span. Following responsible resource consumption practices.</li> <li>4. <b>Technological CDR</b>: Guaranteeing ethical AI decision-making algorithms. Not producing digital technologies that could harm society. Following responsible data validation and disposal practices.</li> </ol>		<p>Choose an item.</p> <p>Choose an item.</p> <p>Choose an item.</p> <p>Choose an item.</p>
<p>Overall, to what extend do you agree with the statement:</p> <ol style="list-style-type: none"> <li>1. Our company is taking on its corporate digital responsibility.</li> <li>2. CDR has a positive impact on our performance.</li> </ol>		<p>Choose an item.</p> <p>Choose an item.</p>
Which other challenges or barriers do you see when implementing CDR in your company?	Click or tap here to enter text.	
Additional Notes	Click or tap here to enter text.	
Sources	Click or tap here to enter text.	

## Appendix 5: Company Sample

Instagram	Corporation	Social Media
LinkedIn	Corporation	Social Media
Meta Workplace	Corporation	Social Media
Microsoft Yammer	Corporation	Social Media
TikTok	Corporation	Social Media
Tinder	Corporation	Social Media
Xing	Scaleup	Social Media
Google (Drive)	Corporation	Mobile
Netflix	Corporation	Mobile
O2 Telefonica	Corporation	Mobile
Slack	Scaleup	Mobile
Spotify	Corporation	Mobile
Telekom	Corporation	Mobile
Barmer	Corporation	Analytics (Data)
Otto Group	Corporation	Analytics (Data)
Salesforce	Corporation	Analytics (Data)
SAP	Corporation	Analytics (Data)
Weleda	Corporation	Analytics (Data)
Zalando	Corporation	Analytics (Data)
Amazon Web Services	Corporation	Cloud
EMC	SME	Cloud
Gridscale	Startup	Cloud
Hetzner	SME	Cloud
Ionos	Corporation	Cloud
Microsoft	Corporation	Cloud
Scaleway	Scaleup	Cloud
Apple	Corporation	IoT
Cisco	Corporation	IoT
Elopage	Startup	IoT
IBM	Corporation	IoT
ING	Corporation	IoT
Intel	Corporation	IoT
Nvidia	Scaleup	IoT
Oracle	Corporation	IoT
Complero	Startup	AI
DeepL	Scaleup	AI
Konux	Scaleup	AI
OpenAI	Scaleup	AI
Palantir	Corporation	AI
Speechmatics	Scaleup	AI

## **Appendix 6: Interview Guideline**

### Introduction:

1. Have you had the chance to look through the survey?
2. Do you have any questions regarding the survey or the topic?

### Subtopic 1-3: General Questions

3. What do you understand by the term “Corporate Digital Responsibility”?
4. Does your CSR strategy involve the responsible usage of digital technologies?
5. Does your company engage in CDR activities? (Such as digital ethics)
6. Where do you see the biggest challenges and opportunities when implementing digital technologies?

### Subtopic 4: CDR Opportunities

7. What are / Would be your expectations from implementing CDR into your corporate strategy?
8. Which concrete opportunities do you see for your business when applying CDR?

### Subtopic 5: Barriers for Implementing CDR

9. Which challenges or barriers do you see / would you see when implementing CDR in your corporate strategy?
10. Which Key Elements would you see as relevant to implement CDR successfully?

### Additional Questions:

11. How do you see the future of CDR in companies?
12. What role should governments and society play in promoting CDR in companies?
13. What recommendations would you make to companies looking to implement CDR in their business environment?

## Appendix 7: Interview Coding Table

Core Literature	Coding Category	Definition	Anchor Example
Yokoi et al. (2023)	Core Strategy	Integration of CDR into the company's norms, values and vision	"You're in a very good position if it's integrated into the company's DNA and processes as early as possible - because now you're building it up." (Interview-7, para.27)
	Beyond compliance	Laws and legislations are only the basis of acting digitally responsible	"The company should voluntarily assume responsibility in the digital transformation and shape digitization in such a way that it serves the good of people." (Interview-3, para.2)
	Clear guidance	Transparent and direct communication of who is guiding the topic of CDR	"Ultimately, it is a cross-cutting issue. You have to have someone who coordinates it." (Interview-3, para.26)
	Comprehensiveness	Employees are the most important internal stakeholder for successful changes and therefore need to be educated and motivated	"These are just sort of topics that we're starting to talk about internally at XXX. We haven't actually changed anything yet. The reason is the awareness for this." (Interview-1, para.10)
Wade (2020)	Economic CDR	The influence of the company on the economy through digital technologies	"There is always CSR / CDR vs. profit at the moment." (Interview-2, para.15)
	Social CDR	The influence of the company on the society through digital technologies	"(...) it's the topic of "Legal But Harmful", so you say okay, there are certain things in the area of handling data, we could do that, it's even legal. But the question is, in the end, aren't we harming ourselves by doing so? It's about the ethical dimension, to say that we don't do everything that can be done." (Interview-3, para.10)
	Environmental CDR	The influence of the company on the environment through digital technologies	"Starting with our data centers we only use renewable energy. And that's been the case since 2017." (Interview-1, para.5)
	Technological CDR	The ethical and responsible use of digital technologies	"(...) Really anybody who tells you that they know how AI is going to affect digital responsibility is either misleading you or they don't know what they're talking about because it is such a massive gaping hole of we don't know very much." (Interview-6, para.12)
Lobschat et al. (2021)	Transparency	It is important to be open with users and customers about unintended consequences, including any negative environmental impact, as well as the costs and benefits of sharing their data.	"Yes, the issue of transparency. Traceability of decisions is, of course, right at the top of the list." (Interview-7, para.21)
	Constant Monitoring	Continuous monitoring of the implemented technology is important to minimize risks of biased data, outdated software and biased or unethical development of AI.	"And these are subject to a very clear framework, they have to be reviewed regularly, (...). (Interview-3, para.12)"
	Long-term consequences	After the technology has been used or sold, long-term effects should be considered. There is a need for guidelines on data protection, storage and general after-sales support.	"But for that to happen, it needs a massive shift at the roots of capitalism. (...) Now there needs to be some sort of acceptance that that's not a sustainable way to run the economy and that we need other KPIs to see if we're doing well or not. If we only grow 0.5% but we consume 40% less energy, then that's for me, a far better result." (Interview-1, para.25)
Brink et al. (2021)	Digital Stewardship	responsible use of data through privacy and security	"Dealing with data is, that is quite clear, the hardest part of reporting, (...)" (Interview-3, para.18)
	Digital Inclusion	making data sets available for research, knowledge sharing	"(...) there's another challenge there, which is you're going to have to deal with a lot of competitors who will not want to be in the same room" (Interview-6, para.14)
N.A.	Influence of Sustainability & CSR on CDR		"Of course, there is still a relatively large focus on environmental issues, but I think that we are basically trying to include all other aspects much more." (Interview-2, para.27)
N.A.	The Future of CDR		"So if it's possible, definitely take CDR into account as early as possible and always include it (...)" (Interview-7, para.27)

## Appendix 8: Interview Transcripts

1	<b>Interview-1 (03.05.2023)</b>
2	<b>I:</b> Can you maybe explain to us what your role is or what you try to achieve with sustainable technology and also maybe what you understand by corporate digital responsibility?
3	<b>R:</b> The responsibility aspect is the main reason I joined XXX because I started off as a journalist. I've always been a journalist. And what got me interested in responsibility was when I was writing about technology for a big sort of general public French magazine for a long time, about 15 years. And towards the end of that time, I realized that CSR for me the most interesting topics were. Sort of had had to use technology responsibly, how to protect my data, how to reduce my screen time and also, how to reduce the impact of my digital activity on the planet. So, when I had the opportunity to go and talk about these things as part of XXX's corporate communication, I jumped on the opportunity. So since then, we've been able to do all sorts of things that are mainly focused on how XXX manages its data centers. Which made to really minimize their impact on the environment. Sustainability isn't just about data centers. It's also about hardware. It's also about software, it's also about coding. At the moment we're broadening the topic to all the elements. The digital sector is 4% of greenhouse gases and data centers and the cloud are a big part of that. But we need to look at all parts of the equation to work out where we can have the most impact. I'm coming at that from a sort of communications point of view. I work a lot with my more technical colleagues who are sort of in charge of the data centers and who make cloud products. When I say there's no there's no one sort of chief impact or sustainability or whatever officer at XXX at the moment it's because we're just sort of learning about how necessary a role or a team like that would be. So maybe it's something that will happen in the future. I don't know. That's not my call. But what we do, we do and this is an unusual thing I think compared with other cloud providers. We are part of a bigger group called Iliad Group, which has a mobile operator or another other sort of company like that. They have a person in charge of sustainable sustainability who I'm in contact with quite a lot and their objective is to be carbon neutral for Scopes one and two by 2035 and scopes one, two and three by 2050. And we are part of that.
4	<b>I:</b> More examples of implementing CDR:
5	<b>R:</b> CEO talks the most about the importance of having a holistic approach. It's as important to look at everything from data centers to hardware to software to code. Starting with our data centers we only use renewable energy. And that's been the case since 2017. And we're always looking for the least energy and water intensive ways to cool our data centers. So, we've been using a technology called free cooling since 2012. So, you can say we've been trying to reduce our impact on them for over ten years now. The way to measure energy efficiency of a data center is called PUE. The global average is 1.57. We have an average of 1.4 for all our data centers and our most sustainable data center, which is one of the most sustainable in Europe. Dc5 can go as low as 1.15. We're really proud of that. We're trying to develop that that one data center in particular. And should we build more data centers in the future? They will be built in a similar way to Dc5. And Dc5 is special because it has no air conditioning at all. air conditioning usually accounts for about 40% of data center's energy consumption. And Dc5 doesn't use instead of air conditioning, it uses free cooling, which is basically you just take the air from outside and you use it to cool the servers and when it gets hot, we use this quite an unusual technique called adiabatic cooling. Is a wall of paper, which we put water on to make the paper moist. And then when the air from outside goes through that wall of paper, the water in the paper cools down the air. We usually only need that when the temperature is over 30 degrees.
6	<b>I:</b> You are compliant with all those data regulations that are applicable in Europe. But do you do anything beyond that? Provide special transparency to your customers? Do you also engage in activities such as digital ethics?
7	<b>R:</b> As a European cloud provider, we can ensure our clients data is protected by GDPR as it has to be. The three biggest cloud providers are all American and there's a law, an American law called the Cloud Act, which allows the US government to access data held by any American company, even if it's in Europe. So, you might be using AWS services which have a data center in Spain, for example. If the American government wants to look at that data, it can. But if it wants to look at data held on by XXX, it can't. That's a factor that our data centers are only in Europe, but we do know that it's something that attracts a lot of clients. We do know that a lot of people come to XXX. For the data sovereignty reason. But beyond we do communicate very clearly if something goes wrong, if there is a sort of a server goes down or a sort of data privacy related worry, then we will communicate it very transparently and we will we update clients in real time and once it's all sorted out, publish a blog post saying this happened, this is how we fixed it.
8	Coming back to the holistic approach: I mentioned the data centers and was talking about energy. It's also important to talk about water. You'll find you'll find a lot of other cloud providers say that they have a really good PUE but they often achieve this at the expense of water. We know that it's you're not allowed to do this in in France, but in other European countries. Big cloud providers use these things called cooling towers which use immense quantities of water to cool down their servers. People in Ireland protested against data centers being set up near them because they just use so much water. We use 3.5 thousand cubic meters of water per year, which is very, very small compared with what the big cloud providers are using and the technologies like adiabatic cooling are really useful as well. And then there's the there's the hardware. At DC5 we have a workshop which is actually for all of our data centers where we take servers that have been going for a few years and we sort of upcycle them and we sort of change parts like hard drives and that sort of thing. So, we can prolong their lives for up to ten years. The industry average is about 3 to 4. So, they will use a server for 3 to 4 years and then throw it away. We make our servers last for up to ten years and also, we recycle about 80% of their components. So, we're really focused on optimizing hardware because we know that of all that digital impact I was talking about, hardware is one of the biggest impacts. the new the new areas that we're looking into are software and coding and those are really interesting sectors. A smartphone, for example, you probably know that 80% of its impact comes from its manufacturing, not from its use. So that has all sorts of implications. Microsoft has just released an emissions calculator so that you could work out the impact of if you bought a Microsoft surface computer or tablet or whatever it can, you could work out its emissions impact. So that's that that's really interesting to look at. It's great that the manufacturers are releasing that sort of data. The work of the Green Software Foundation, they have this measurement called software carbon intensity. You need to be wary of the fact are you using software that's using too much energy or not? If you consider XXX, for example, the actual software weighs about 200 times heavier than it did 25 years ago. But I mean, is it 200 times better? I don't think so. It's just been coded in a way

that is really heavy and it's the same goes for websites. So that really needs to be looked at very closely - it's a bit like with the hardware. Do you need to be using the latest iPhone? The fanciest version of office? Or can you be using a version from a few years ago which uses a lot less energy to run?

- 9 **I:** Do you already look into things like that within your company? Whether they're using they need to use the latest hardware in terms of laptops or phones or whether you what version of office you use or is that not yet a thing?
- 10 **R:** It. It's not yet a thing. We use XXX and I'm not sure if that counts as software because it's completely online. The laptops that we don't use anymore are recycled, just like the servers mentioned in our data centers. But the reason the reason I'm talking about it is these are just sort of topics that we're starting to talk about internally at XXX. We haven't actually changed anything yet. The reason is the awareness for this.
- 11 There is an awareness for those topics already. We have a group called Sustainable Scalers. And these are the sort of things that we're that we're talking about. They can be made just to sort of spread awareness of it of these sorts of things internally. The other reason it's important is not just it's not just how much energy your software is using, it's also will your software make old hardware obsolescent. You've probably seen I keep mentioning it's nothing. You must have come across the case before where your phone is too old to download the latest version of XXX, for example. That is linked to, whether that software has been coded responsibly or not because if it's making thousands of devices obsolescent, then it's not good. You should be able to code your software in a way that works with as many devices as possible because if it doesn't, then you're encouraging people too.
- 12 **I:** Which concrete opportunities do you see for businesses and especially your business when applying CSR and CDR?
- 13 **R:** There are several steps. Not all companies have impact reports and yet there is a European directive which says that all companies over 250 employees have to have an impact report by next-by-next year, which means they need to start collecting the data now. I'm not sure how many of the companies are aware of that, but they could get in trouble if they're not. It was 500 before and now it's 250. The essential first step is always measuring and then that exercise will enable you to identify what are the opportunities your company has to be more sustainable? There might be some quick wins in there. There might be some things that take longer to fix. They are going from our experience, if you don't yet have a CSR or CDR person or team - Why not make an informal team of colleagues who care about the topic. What I'd what I'd like to see XXX do next. And I suppose this could apply to other companies too. Is try and work out what sort of green products you could sell. Because. This is business after all. We're trying to move towards more sustainable business. I think that clients of all sorts of services will demand more and more sustainable products. Whatever those products are, we can see that in sort of consumer space already. First, as is the case at the moment, it will come from personal preference. But with the sort of regulations that I was talking about like the impact report one there are loads of other European regulations coming through at the moment. Soon people and companies won't have the choice. If they can't offer sustainable products to their clients, they will lose clients and they could also get fined for doing things like greenwashing. There's one of the new regulations about that. Companies can now get fined for greenwashing and sort of making unjustifiable claims. We are at a really interesting tipping point between nice to have and now it's sort of moving towards must have so those companies who haven't already started some kind of CSR or CDR initiative are going to get left behind, I think.
- 14 **I:** A short recap of that: It would be on the one hand an opportunity for companies because of legislation changes, for example, that they have to offer more information in the sustainable direction and also take more responsibility because they have to offer this information. And on the other hand, also it could be an opportunity to create green products and diversification for the clients because the demand of the clients and the preferences will change in this direction. That I understand you correctly with that.
- 15 **R:** Yeah.
- 16 **I:** Do you see any challenges in implementing sustainability or to become more sustainable in terms of digital technologies?
- 17 **R:** I can't not mention the financial aspect because, we've seen it so many times before and there have been a lot of over the past ten, over the past decades there have been a lot of what I call "green waves" where everyone when the economy is going well, people go: we need to look after the planet. And everyone says, yeah, when they can afford it and then when the recession hits. Spending on things like sustainability is often one of the first things to get cut. And there's sort of increasing talk of a recession in 2023 and 2024. Um, my concern is that that will be used by some companies or sort of shareholders to say we can't afford to invest in sustainability at the moment, we'll do it later. I think that's the biggest risk that we're facing at the moment. The way around that risk is to say it may be a cost now but so many experts say the cost of doing something now is going to be way smaller than the cost of doing nothing or trying to do something later. Because it might get be it might be much more expensive in the future if there are regulations coming in. I was talking about ten, 20 years ago before things like climate deniers and that sort of thing would have been an obstacle. I don't think they are anymore. Um, you've got heatwaves, you've got droughts, you've got all sorts of things like that. But I don't I don't come across many climate change deniers these days, fortunately.
- 18 **I:** You already mentioned as one of the key elements to implement successfully is the holistic view to implement it not only on, on hardware but also software code, whatever. Do you see any other aspects they are mandatory to implement something like that?
- 19 **R:** What's interesting in your proposal is that you put the D instead of the S, which is the social aspects. You can't take the social aspect out of the equation. There's something else that XXX has been really progressive about. A more sustainable tech sector has to be one that resembles society more. There aren't enough women in tech and there aren't enough minorities in tech. For me, the sector can only be sustainable if it's more like 50 - 50 currently it's 80-20. It applies even more to tech companies because it's one of the one of the sectors with the lowest proportions of women. Access to access to technology, access to education as well.

- 20 **I:** It's hard to define it right now but is defined by a few experts on the topic and they actually include the triple bottom line of CSR. They do include economic, social and environmental and add the technological factor. But you are right when you just refer to CDR, it sort of gets canceled out. So, this is something we can for sure think of if this is the right term for the for the whole thing, right?
- 21 **R:** Yeah, maybe CDSR.
- 22 **I:** How do you see the future of CSR and CDR in the development for companies especially?
- 23 **R:** I hope it will disappear. And I mean that not in a "I hope it will go away". I hope it will be sort of diffused in the in the values of every company that Ono team will be able to do something unsustainable. The current sort of sustainable wave, as I call it, has been compared a lot to the last to the digital revolution. It's we're talking about something that has to be really profound. I'm talking to you guys about digital technology right now. We just take it for granted. No service or product can be launched in the future if it has an intolerable impact on the planet. Okay. So basically, the European Union is looking to phase out petrol cars by 2035. That sort of thing.
- 24 **I:** So basically, it will be kind of standardized in every strategy and everything companies and every society does in total that it will be just normal to act sustainable and with thoughts about society in total.
- 25 **R:** I'm being very, very idealistic here. For me it's something that has to happen. But for that to happen, it needs a massive shift at the roots of capitalism. And GDP can't be the only measure of success. It can't be the sort of growth that we're supposed to be generating every year that is not sustainable at all. Plus 2 or 3% every year. Now there needs to be some sort of acceptance that that's not a sustainable way to run the economy and that we need other KPIs to see if we're doing well or not. If we only grow 0.5% but we consume 40% less energy, then that's for me, a far better result.

#### 1 **Interview-2 (08.05.2023)**

- 2 **I:** Thank you very much for making this work. The two of us are writing about the same topic area, so we are collecting data together. Carlos focuses a bit more on the business opportunities and I focus a bit more on the implementation in the company of CDR and how to implement that as a strategy. We might ask a few different questions.
- 3 **R:** Thank you. You're very welcome. I hope I can help in some way.
- 4 **I:** First of all, we would like to briefly introduce you to the topic, because it is a new topic that is not necessarily so well known. So that we are on the same level of understanding, I would just briefly tell you what our interpretation of the whole thing is. We would give a short introduction to the topic of CDR and then you can of course ask questions about it. If anything remains unclear, we will answer your questions and then we would jump specifically into the topics of the interview. It would be cool if you just answer as openly as possible about everything. It's an exploratory topic that we're doing here right now. It's nothing concrete. Accordingly, things that just spontaneously come to your mind or anything else are super valuable for us to understand how people think about the topic in general. Then I would briefly jump into the topic. Corporate Social Responsibility is already a topic that is basically known by all the companies and also in society. The debate has become very, very big and companies are now more and more responsible for demonstrating responsible and ethical behavior, especially in times of digitalization. Companies are increasingly using digital technologies. All this use of digital technologies, on the one hand, can be sustainable. On the other hand, it can also have negative effects on the environment or on society, and that is what we are focusing on. So we have the positive aspects of digital technologies on the one hand, and the negative aspects on the other, and we would ask questions about them accordingly. Corporate digital responsibility is then defined as a set of practices or behaviors that companies or organizations can adopt or display in relation to digital technologies in order to be perceived and act in a socially, economically and ecologically responsible manner. Do you have any questions about that right now?
- 5 **R:** I think that answered most of it. What I read a bit in the research is that the CSR and CDR topics actually go relatively in the same direction, only supplemented by this digital component, right?
- 6 **I:** Exactly. So that is also a principle that we actually included in the thesis. Is CDR a part of CSR, so to speak, or is it a completely new subject area, because it is such a huge topic with digitalization and that it will also progress in the future in the way it is right now, whether it will not also get its own dimension.
- 7 **R:** Okay. And the idea of sustainability is not only about the ecological issue, but also social issues in general?
- 8 **I:** Exactly. Then I would start with the questions now. The first question would be what corporate digital responsibility is and includes from your point of view. What dimension would you possibly see in it that we may not have mentioned yet? Is there something that was missing from your point of view or something that you would basically like to add?
- 9 **R:** I think that fundamentally it is not only the topics that are already there, all these digital topics, that have an influence on it, but possibly also the possibilities to have a positive influence in the world through digitalization, independent of companies, i.e., through start-ups etc. That is a topic that I think is important. That is a topic that I think I would still see there or somehow. Apart from that, I don't think I have anything to add.
- 10 **I:** Thank you very much. The next question would be, if you now speak from your experience, both with XXX and with customers, do you think that companies already include these digital technologies within their CSR strategy, i.e., include CDR in CSR?
- 11 **R:** I believe that there is a smooth transition, that it is not so easy to define what the company does in one area or the other, but that it is interrelated. So right now, if you look at, for example, a topic that we had recently worked on within XXX, how we produce an ESG scoring for our customers in a digital way or digitally, in order to simply make green investments easier or simpler. And these are things that are already done manually,

more or less without technology, or even rather these rudimentary technological factors, i.e. simply Excel etc., and are now being given a new face through all these new topics. I believe that there is a lot of potential in this and that there is simply a change from one to the other.

- 12 **I:** Okay. So, can you basically say that many companies have integrated CDR into their CSR strategy, even if it is not called that?
- 13 **R:** Yes, the companies with which I have had experience, I would say: yes. The bigger the company, the more regulations it is subject to and the greater the CDR advantages for performance. Such a topic is always important to consider from a legal point of view and is anchored to a certain extent. Here, as an employer, you can also position yourself well with such topics in relation to digital responsibility and attract and retain better and more motivated staff.
- 14 **I:** Okay, perfect. Thank you very much. Then I would like to jump into the next topic. And those would be the possibilities and the opportunities that CDR offers for companies. What business opportunities can be expected from the implementation of CDR in the corporate strategy? What opportunities do you see in CDR?
- 15 **R:** On the one hand, I think it is difficult to connect the topics, because the opportunities naturally also result in a few negative aspects. There is always CSR / CDR vs. profit at the moment. I think the whole topic of digitalization makes work processes more efficient. But of course, more efficient is good on the one hand, but the company also has a responsibility towards its employees. And that's what's currently happening in the start-up world, for example: Layoffs of 25% of the employees and workforce, etc. These are negative aspects of digital technologies that can be counteracted by CDR. So, the question is, to what extent was sustainable management already in place beforehand? Also, which companies are being considered? That's all well and good for large companies. But especially here in Germany, small and medium-sized enterprises and individual entrepreneurs, small craftsmen, are a huge basis for economic success. They could benefit immensely if large companies passed on their know-how in this area. So that the general economy can benefit from it, i.e., also smaller companies, etc.
- 16 **I:** A question about something you just said. You mentioned the point about employees, that of course when you use these digital technologies, you also have to pay attention to the employees, for example through the exchange of employees through artificial intelligence. That is also a big topic. Would you say that if a company implements CDR in its strategy, that this can have a positive aspect on performance? Could you say that?
- 17 **R:** Basically definitely, but I think it generally depends on the management, because I think what we see very often is that bonuses are based on annual results and not on the long-term development of the company, which is why decisions are often made at the expense of others. So, this could definitely have a positive effect, especially because the employees would then be better trained and more competent with regard to possible risks. So, there would certainly have to be training for the staff through the CDR initiative. Money would have to be invested and taken in hand. In the long term, this could significantly increase the company's output. But if you look at how things have been over the last few years. In my opinion, there is also a danger of implementing these technologies - not the CDR topic in general - in order to make work performance more efficient in the short term and perhaps also to replace one or two employees cost-effectively through technology. There is also the issue of greenwashing. I believe that if the right resources and technologies are used in the right place, there could be a significant improvement in CO2 output and the burden on the environment and society could be significantly reduced.
- 18 **I:** Okay. Thank you very much. You have just mentioned, for example, that of course you have to pay attention to how you introduce technologies, that you give people training so that they are not thrown in at the deep end when a new technology is introduced, that you have to think holistically in general and include all stakeholders. But can you think of any other topics that you consider important in order to be able to keep digital technologies in the company sustainably and in the long term, without, for example, having the goal of employee layoffs?
- 19 **R:** Yes, it depends on the size of the company. The decision-makers often or perhaps have completely different interests than the employees or the company itself. And of course. Such strategies could be used to position the company and to unite stakeholder interests. But I would hope or wish that the long-term idea would come a bit more to the fore.
- 20 **I:** So, in theory, it's also a question of how transparently the company communicates, especially with regard to the use of data, for example. Maybe you can think of a few more topics that you think are important, that would have to be in place for the introduction.
- 21 **R:** Yes, I think that if you look at the data issue, it is of course a big hurdle, also in my eyes at least, because the bureaucracy is relatively high, especially here in Germany, for the introduction of new issues, especially unknown issues. I don't know whether certain things need to be better monitored and taxed at the federal level, or whether they need to be simplified for the companies.
- 22 **I:** Thank you! Do you see that more as a hurdle and as a problem for new technologies, because for example in connection with corporate digital responsibility, that is presented rather positively, that in Germany the data protection guidelines are already at a certain standard compared to the USA, for example.
- 23 **R:** Yes, I think it is basically a positive aspect, but on the other hand, it makes the implementation of new technologies and new ideas somewhat more difficult. It has to be tested first and you lose time and efficiency when it comes to this topic. But basically, of course, the more the internet spreads and the more this whole topic goes on, the more relevant this kind of thing becomes. So just in terms of the general digital identity of every citizen.
- 24 **I:** Yes, then a concrete question about what you said earlier, that large companies often profit from large amounts of data, but smaller one's profit less, also because they don't have the technological possibilities. Would you consider it important that large companies release certain data with regard to data protection, if positive things can be derived from it? Any best practices, for example, that smaller companies don't have at their disposal or general AI data sets for research, for example, should be allowed to be shared and passed on so that companies can benefit from it, or do you see that as rather difficult from the point of view of data protection?

- 25 **R:** Yes. So, in principle I would be in favor of that. However, the question is to what extent, of course. It is not my intention to give out private data of the customers etc. But as we do at XXX, best practices are anonymized and shared. I would see it more in this direction, i.e., that smaller companies, individual companies etc. also get the chance to use these technologies successfully and responsibly and to implement them.
- 26 **I:** Okay, great. Then we could talk about it again briefly. How do you see the future of CDR in companies? Maybe you can relate it a little bit to how CSR has developed in the last few years. Ten years ago, it wasn't really a concept. Of course, it was about sustainability in companies, but often it was related to the environmental aspect and not necessarily to the social or economic component. How do you see it?
- 27 **R:** With CDR, this digital area will develop just as much and there will be even more legislation, for example, on mandatory CDR reports. Of course, there is still a relatively large focus on environmental issues, but I think that we are basically trying to include all other aspects much more. But the question for me is still. When will who wake up? I think the change should be brought about as soon as possible. If you look now at what has happened in the last few months and this whole artificial intelligence issue here. The events are coming thick and fast and I think we need the know-how and expertise to use these things in a targeted way. That's exactly the problem, that especially in Europe (Italy, for example), people prefer to ban such technologies out of hand instead of learning how to deal with them responsibly. That's why I believe that a holistic concept like CDR, if you think in terms of the ethical use of AI, for example, is needed for companies to prevent the whole thing.
- 28 **I:** Exactly. Do you think that the government could also play a big role in this? That really has to be the case that such legal requirements are needed. In the direction of data protection there is of course already a lot, but in the direction of AI in the direction of energy efficiency, for example, of data centers or recycling of old IT equipment, whatever.
- 29 **R:** Yes, I think you always need a certain framework somewhere. But the question is to what extent the politicians are capable of making purposeful decisions, which you can see now, as you said, in the example of Italy. It's just some older suits who decide on the future or the digital future of the country. And the question is, if not every country is pulling in the same direction. To what extent does it make sense to ban certain things locally? I see that as very, very narrow-minded. That's why it's always a bit difficult. New technologies still bear the danger of negative use.
- 30 **I:** You can see it right now in the data guidelines, for example. The GDPR basically only applies in Europe and not in America, for example. But if you use services from Amazon or Microsoft in Germany, the data is often stored in America and is then subject to other laws. We have heard more than once that such regulations are not very useful because they are digital technologies.
- 31 **R:** Probably yes. So especially if you think further about an internationalization idea like. How do you ultimately create interaction between the different countries? So how do you develop together and how do you make it so that everyone doesn't work against each other in some other direction?
- 32 **I:** Yes, okay, could you perhaps conclude by saying again what you have understood from our conversation. Could you go into more detail about where you see the advantages of a CDR strategy and where you see the difficulties in introducing it?
- 33 **R:** Yes. I would start with the difficulties. I would see the issue that the regulation and the objectives are still relatively unequal, or that there is uncertainty about the speed and direction in which the technologies can develop in general. Do we still have control over this? If so, to what extent and then to bring these into the companies in a target-oriented way is, I believe, a difficult goal in which not only individual players are relevant, but an interplay of different players from politics to companies to science. And yes, I believe that the advantages will outweigh the disadvantages in the end. Because we have one planet. Each of us has a life and should be able to make the best possible use of it. And it's no good if we run down our most valuable resource here, the earth, so quickly that future generations will no longer be able to survive here. I believe that the opportunity that this rapid development of technologies now offers is perhaps to turn back the clock a little.

0 **Interview-3 (12.05.2023)**

- 1 **I:** How would you define CDR?
- 2 **R:** There is no universally accepted definition. The company should voluntarily assume responsibility in the digital transformation and shape digitization in such a way that it serves the good of people. That is also one of the guiding principles that we have in the Codex. So ultimately, it's not just a matter of implementing the whole thing from the company's point of view, but also of involving people. That means first and foremost involving customers and employees.
- 3 **I:** And what is the motivation for you to enter this new construct so early and publish an annual report?
- 4 **R:** It fits perfectly with our business model. I would say we are not yet a hundred percent digital bank, but we want to become one. We are a direct bank, in terms of our business model, which started with a lot of phone calls, etc. and then moved more and more online. We now have over 4 million app users or 4 million devices on which the app is used. And that is actually our goal, to be able to handle our entire business digitally in the future. That is our clear business model, the goal of our future business model. And that will only work if we can bring people along with us. And if people say no, I'm not interested in digitization, then they won't be our customers. And at the same time, of course, we have to take our employees with us. They are, I would say, in a different mood than someone who has worked at the counter in a savings bank for 20 years. But a lot is changing internally there, too. Unfortunately, we still have far too much paper, because we still have a large block of old savings accounts that ended up with us via our extra account or the call money account. But if you come as a customer today, you can only come as a digital customer. You can still call, etc. but you have to set up a mailbox, etc. You have to have an email address. And that's why I always tell us this actually affects us much more now. We have other members in the initiative, like now, Weleda or also Telekom is of course also already very digital or now some production company. At the beginning of the initiative, there were also some other companies, industrial companies. Miele was also involved at one point, but they all dropped out. It's all about the Internet of Things, above all, and it doesn't really matter whether the customer uses a WLAN function to control the washing machine or not. They sell the washing machine anyway, but if someone doesn't have

anything to do with digitization, they won't become a customer of ours. You can see that in the foreword, where I deliberately wrote it into the report. For us, it is also an economic success factor that we have the trust and can take people with us. Otherwise, we will also have economic problems in the future.

- 5 **I:** What specific advantages can companies derive from including CDR in their strategy, so to speak? You've already said in part that this fits well into your business model and also into the particularly financial thing through customer acquisition and customer loyalty. What other advantages or fundamental opportunities would you see within CDR for companies to either generate sales or possibly also reduce costs?
- 6 **R:** Digitization naturally has something to do with cost reduction. In the past, we sent out paper without end. We received papers from customers without end. Today, for example, if you want to take out a mortgage with us, you can upload the documents. We then process them directly. I'd like to say that we used to sum up our business model as simple, fast and inexpensive. So, we don't have 150 products, I mean securities you can get everything, but we have now in the savings area, credit area, etc. We have basically ten products at the start. So, we keep it very small and we want to be efficient. So, we also do that so that it doesn't become too complex for the customer. And that's also the whole digital transformation today. If you look at our app, you have the option of using photo transfers. It's all about acceleration and simplification. And that's good for both sides, for the customer and for us. And it's only on this basis that we can offer a checking account free of charge, for example. As soon as there's paper back and forth and so on, it becomes complex, it becomes expensive, and the market, the banking market, is tough, and it's all about cutting costs and so on. In principle, every savings bank is also a digital bank in parts. If we know, if we now get further advantages, then we are of course also with our employees that we must take them with us. And I think CDR is also an attractive factor for new entrants (into the job market), etc., at least in the medium term. There's a company that's already a step ahead of the others and is thinking about the issues and dealing with exciting things that others haven't thought about yet. In the battle for good young talent, etc., this is also an aspect that we keep in mind.
- 7 **I:** Regarding the app. For example, because you have so many users of this app, it is of course also important for you to apply CDR from a corporate perspective. Would you say that this accordingly also differentiates you a bit from other companies in your product portfolio, that you say, okay, you take responsibility for your digital technologies, for your digital activities. Would you say that's a differentiating factor why people would choose ING now instead of another company?
- 8 **R:** I don't know yet whether that is so present with the customer. You have to be realistic about that, too. But we have a feature with us, for example, that is our ING security promise. And it says that if you somehow do something on our and on our digital channels and are harmed by phishing or anything else, we will take over the damage, regardless of whether they have acted negligently, slightly or grossly or anything else. So that's a big asset that we have. It's also a signal to the customer that you can trust us in the digital sector. Nothing can actually happen. Even if you make a mistake, nothing can happen to you. And then you have to see when it comes to phishing and so on. It's not that our systems are hacked, it's always the customer who is the weak point, who somehow allows himself to be fooled, enters some sensitive data somewhere where he shouldn't do that, and then his account is used in a technically legal way, because the fraudster got the access data, which he didn't hack, but got from the customer. And here, for example, an important signal that we have also deliberately set in this context is the following
- 9 **I:** You also just mentioned the employees, taking the employees along in the context. That is actually based on the literature research that we have done, that is also an interesting point for us, which is seen as an opportunity for companies to apply CDR. What I would like to ask you is whether you see this in the same way as we do now, namely whether employee involvement in this aspect means that employees are taught, for example, why data is so important or how to really handle data properly, how to simply function well in the digital context or in this digitalization and also how to function in the interests of society. Would you say that this saves costs for employees due to misconduct, for example, or that it basically also increases employee motivation, which is increased by acting more sustainably, by acting more in the interests of society? Could you say that from your point of view?
- 10 **R:** Well, I wouldn't link it directly to costs, but it's also about competencies in the end. So, I mean, you have probably looked at our report and there is also such a point, which is with us also we are part of the ING Group, so Amsterdam and there are for example the so-called Six Capabilities. These are the skills that have been defined that employees will need in the future. And there is, for example, the professional handling of data and cyber security. It's clearly the law that we say, dear employee: if you want to work with us in the long term, you have to deal with these topics, and accordingly we also have internal offers, e-learning courses, and so on. Another important aspect for us is the handling of data and so on. There is also a lot of e-learning on this, and I think it's always quite crisp - there used to be a small e-learning, it's actually written about this, it's the topic of "Legal but Harmful", so you say okay, there are certain things in the area of handling data, we could do that, it's even legal. But the question is, in the end, aren't we harming ourselves by doing so? It's about the ethical dimension, to say that we don't do everything that can be done. And there are always internal events, etc., where I have already been involved and so on, where we sensitize our employees to this. And there are also not exactly small reputational risks involved when you do certain things that you perhaps shouldn't do, even if you could say it was legal.
- 11 **I:** Very interesting point, also legal will have earlier of course also a very good sentence in the context a question then also directly to it would one could categorize that so a little bit also as risk management also, if one would say that one gives to coworkers on the way that that is legal, but of course that has nevertheless damage and also in the long term seen then risk management
- 12 **R:** For us as a bank, the topic of CDR is of course also linked to the topic of risk. So if you take a look at our measures, what we have, yes for example a risk management policy, there is a whole framework for it at Group level, we work with risk models to a large extent still with one also in the customer business, but above all also, as far as our risks are concerned, so the capital market, risks etc. There, modeling is done and scenarios are set up where we look at what will happen to our portfolio if this and that happens on the market. And these are subject to a very clear framework, they have to be reviewed regularly, and so on. And all of this is done with algorithmic models, which is ultimately always part of AI or something like that. But above all, we also look at it from the point of view of risks, simply to say that if we have an AI or something like that running that has some kind of bias or something, that can also have a lot of negative consequences for us, not just for the customer, but also for us. So, the risk aspect is always involved in a bank, actually, and if we now sensitize our employees to topics like ethics or something like that, then that always has the aspect behind it. We have to protect ourselves against reputational risks, for example.

- 13 **I:** If you were to look at the activities in the overall market and compare companies, to what extent is the size of the company relevant when it comes to the advantages of CDR? Would you say per se that larger companies might have more advantages from the application of CDR than smaller ones, or vice versa?
- 14 **R:** Yes, I would say that we have a company like Telekom or Telefónica and so on, and that's natural. So first of all, a large company is basically in a better position to initiate something like this because, for example, they already have a CSR department or something like that and they have the manpower to do something like this and they also often have more professional structures. However, that doesn't mean that a small company, which perhaps has a more focused business model, can get involved in the whole thing. But of course, with a large company now with millions of customers, there is also the possibility of steering something to the customers. Not every customer will be interested, but there will always be a part of the customers and that's not just 100, but probably 100,000 or so who are interested. And that's why it's perhaps more of an incentive for a large company, because there are also more opportunities.
- 15 **I:** Maybe you can tell us a little bit about how you started with CDR. What difficulties did you encounter at the beginning?
- 16 **R:** Well, the topic came up for us via the CDR initiative, which was launched in 2018 by the then BMJV, i.e., the Ministry of Consumer Protection, which was part of the Ministry of Justice at the time. It was the State Secretary XXX who initiated it back then, he was such a visionary guy. And we had. I originally came from consumer protection. I also have the title of consumer protection officer at the bank and had very good contact with him, because he also came from consumer protection, and he was the one who started the initiative for us back then, and then there was a contact where he said that this is actually a topic for you, even as a digital bank. And we said, of course it's an issue for us and we'd like to be involved. Then there was the initial phase. There was a bit of an interim phase where we said we'd continue with the founding members for now, and then we just joined them 3/4 of a year later in 2019, and there's a core working group in the initiative where people from companies, people from the ministry and the scientific support are in it. And then we developed the code together. So that was quite amazing. I have already worked in many working groups, and it was really possible to make it concrete. Of course, there were also many discussions because it involves many demands, which also led to some members dropping out because it was, I would say, too hard. So, we just got on board and helped to shape it in the future.
- 17 **I:** What do you see as the most important points contained in the codex? Do you simply agree with all the points or do you see more important points that are missing, especially for your company?
- 18 **R:** Yes, of course. Of course, this is always a compromise solution. And you also have to see that if the goal of the initiative is to attract new companies, you also have to bring along a certain pragmatism. But if you set the bar too high, no one will come. All the companies that are involved report on sustainability and on this and on that. And of course, you have to make sure that this is manageable. As I said, I think that was the reason why some companies said they didn't want to do another report and then said goodbye again. So that's an important point, and you can see it in the weighting of the targets. You have to include at least one measure for each target in the report. That is the main focus. Dealing with data is, that is quite clear, the hardest part of reporting, to do something concrete. So many employees and so there is usually always something that you can bring in with it. But that's where it gets down to the nitty-gritty, and I think that's also clear that this is the hard core of the whole discussion, and we're then at the level where we say, okay, we have a GDPR, but we're then talking about what goes beyond the GDPR. If you then approach the people in the company and say, of course, we are also busy implementing the GDPR, now you are already coming back with the next stage. That is very important. I have the advantage that I have been with the company for a long time and know a lot of people. You have to be well connected and be able to explain the purpose of the whole thing to people. Because very few people are interested in a report. Well, if you don't get the sense conveyed.
- 19 **I:** We also noticed that a lot of it is about the management having to communicate transparently why this initiative should come into being in the first place and why energy has to be put into it. Do you have any points to mention that have not yet been listed, but which you consider to be enormously important with regard to more responsibility?
- 20 **R:** Let me say that this is what I said at the beginning. I believe that every company, even if it only has a digital business model in part, will have to deal with this topic in the future. Yes, so this is not something that will suddenly be at the top of the list next year. But I am firmly convinced that it will be. And it has to be said that this is actually rather unusual. With the CDR initiative, we were actually ahead of the wave, I always say. And you can see that we've done that in your research and that we've brought that about. It's quite an achievement for a committee like this, which meets once a month, to install such a code and fill it with life and to win over companies that do this. But that also has a lot to do with good scientific support. There is now also an office that also provides this scientific support, which is then done jointly by the Group and Policy, and that has also been an important driver in the whole environment. But that is, I would say, amazing. And the exciting thing for us, of course, is to sit down with companies from all sectors. Otherwise, you only sit together with banks or financial service providers, now with the Otto Group and Weleda and Zalando or something like that. And of course, that's also exciting, to get ideas from other areas, where companies might look at a topic in a completely different way. And that's also what I think all the members really appreciate about the initiative, and that's also important in terms of approaching the topic in a somewhat open-minded way and also looking at how others are doing it now, and everyone is on the move in the digital sector. But maybe we'll see something outside the financial sector that would actually be a great fit for us.
- 21 **I:** Where do you see further difficulties? Do you think that the financial aspect is difficult, because you don't have a team that can take care of CDR, or does the size of the company play a role, or perhaps other ideas as to why so few companies have done this so far?
- 22 **R:** Yes, I think many have not yet really dealt intensively with the whole issue. I think that's been a big discussion as well, of course. What does the report look like? We now have to deliver 200 pages full of writing, etc. And it was also important to do this relatively pragmatically, but also in such a way that it is not something that just anyone can do, but that it also has a claim. That's the balancing act we had to do between the demand, which is perhaps too high. Then they don't get anyone in, but also a claim that is too low. Where I would have said now, I don't want to be there. Well, in the end, to say I commit myself to comply with the legal conditions, it can't be with the voluntary commitment, which is often the case in some areas. So that was important, and of course it's also important for new companies now. But now they also have the advantage

that they can see what such a report looks like and that it can be assessed pragmatically. I think many people are somehow afraid of this and don't see the opportunities in it at first. But the most important thing is simply to convince the management or the board of directors that this is a good thing for such a company. Without that, it won't happen if someone sits up there and says we won't do another report. Then the issue is off the table for the time being.

23 **I:** And how did it come about that you specifically took care of the topic?

24 **R:** Yes, I am responsible for consumer protection in our company. And one of my jobs is to look ahead and say, "Where are the opportunities for us as a company to position ourselves positively in the market? And when I heard the topic, I said bingo, that's it. It's not going to be on the news in two years' time. But in the long term, that's our topic, quite clearly, because it goes right into our business model, into the core of our business model. Everyone has understood that about us,

25 **I:** Most companies tend to place it in the CSR department. How is it divided up for you?

26 **R:** Ultimately, it is a cross-cutting issue. You have to have someone who coordinates it. That's how it ended up with me. But I'm constantly talking to people, especially with the DPO, the Data Protection Officer, and then of course with the people from the specialist departments, from IT, and so on. I also have to coordinate the report with them, for example, and I always try to bring people back in, some of whom go to the CDR Initiative events as experts, etc., so that they can see what we're doing and find it interesting, and then of course a large part of it is training for employees, of course the whole CSR area, so that they also strongly support it, and they have to bring people together - that's very important, and it doesn't really matter whether there's someone sitting in CSR or I'm sitting in the legal area or whether it's strategy or something like that. So ultimately, it's the noses that count, not the formal function,

27 **I:** You have just spoken of a positive market positioning. From the regulation that also comes from the state nowadays and will also come in the future. There are always regulations that simply reinforce this whole issue. The fact that companies have to deal more with this, such as, for example, issues that have to be dealt with sustainably in the entire supply chain of a company. Companies that are not their own, so to speak, but others with whom they compete. Would you say that within this topic, more opportunities are opening up to cooperate with other companies by also driving this topic forward?

28 **R:** Yes, I would say that is always the question of market position. We are now a fairly large provider and with us it is rather the case that the service providers try to get in with us and we don't apply for anything. Somehow. And of course, we have very clear policies at the corporate level regarding purchasing and so on. We have the whole supply chain problem, which affects not only some manufacturer, but also a bank and. That is also a part of the handling of data, where it is a matter of, now, when it comes to data from third parties or so on and so forth, where we also say, okay, we have very clear policies. This is a real onboarding process, if someone wants to join us and deliver something with a lot of paperwork or a lot to fill out. Paper maybe no more and requirements that have to be met. These are what I for example police clearance certificate from the management or so on. This is often not so much fun for colleagues, but of course it also has something to do with risk protection. That we don't work with anyone who suddenly either performs poorly or turns up negatively somewhere or something like that. So for us it's all about the customer, ultimately I mean in a certain way, but then we're actually away from the retail business. We also do business with corporate customers, so that's where we are again, of course. If we now offer services to companies, we are of course also the ones who are then checked. Ultimately, this could be a positive aspect, but I don't think it's really relevant today.

29 **I:** How could the topic be pushed further? Do you think the government has a lot of influence there, that something similar to the mandatory CSR reports has to come? Or should it remain a voluntary obligation?

30 **R:** Well, first of all, I think I know a little bit about how this is planned. On a political level, it will remain voluntary and the goal of the initiative is to get new relevant companies to join in and thus to keep expanding the circle and perhaps also to get a certain pressure in the market at some point, to say you actually have to be there as a company, especially if you have a digital focus or something. That there is something going on by law. You have to see that now. The legal things today don't come from Berlin, they all come from Brussels. If there is, then there is some directive, AI ACT or something else, but from my point of view - the topic is not yet that far advanced. But the possibility can definitely not be ruled out - and if we look at the whole sustainability area with taxonomy and so on, that also took a long time, but the possibility can definitely not be ruled out that, for example, I'll say it will become part of ESG or something like that in the long term and then also flow into some reporting obligation or something like that.

#### 1 **Interview-4 (15.05.2023)**

2 **R:** Before that, I worked with large American corporations for buildings, automation, air-conditioning technology and so on. And the Americans also have a lot to say about responsibility and sustainability and so on. We've done a lot there, too. So, I definitely kind of have an opinion on that. And I'm curious about your questions.

3 **I:** We have now briefly given a definition of CDA. First of all, we would be interested to know what you would think of when you hear the term now, or what should come to mind here.

4 **R:** The term CDR, as you now call it, I have to say quite honestly, is not really that familiar to me in the community, I would say in the IT community, because of course people talk more about the topic of sustainability, but that is always the classic, I would say, term that is used. But this topic, that you then bring in this digital responsibility, is actually not. But what is being discussed a lot in its entirety is of course how IT can influence the whole issue of sustainability and individual players and so on. So that's why I have to admit that this is the first time I've consciously read or perceived the term in your context, and that's why it's rather interesting for me. What is happening within IT right now? So of course, we have quite a mission as IT bosses to bring a certain technology into the masses and into companies in order to help and pay into the future, also

on the topic of sustainability, on the topic of how we can somehow use it better for our employees. And because digital technology is now also impossible, so I really don't think there is any company that can do without it because it is now only custom in really every process and every employee and is now also so, that we ourselves also now times the machines, which are now somehow quite classically somehow on the thus in the factory halls are we connect meanwhile where we measure consumption where we measure throughput times, where we look like we also optimize that to find out here for example also closer how we can use the then possibly on the basis of the data we read optimized now not only in the course of course of productivity. But also, energy consumption, of course. Even machines that are 20 years old or older can now be made smart. And that is somehow the task we have now as IT managers, of course, to make these things smart and to use this data accordingly.

- 5 **I:** The first thing I wrote down is this aspect for the employees. This is also something that we have once read about in the literature. The point is that if you implement CDR, also in the corporate strategy, the employees will of course also benefit a lot from it, for example through training or similar aspects, and in principle the company will also benefit from it in terms of performance. Would you say that you can say that in this aspect?
- 6 **R:** Yes, sure, absolutely. So, you have to say that it is not only the daily performance of the people who now, as I said, also produce a lot of goods. In our company we call it the shop floor, yes, I don't know if that's such a common term. That means that everything that takes place on the shop floor, i.e., on the factory floor, on the machines is somehow increased by digital technology and by each employee individually, the productivity but also the added value. So to give you a few examples: We are now also doing tests where we are responsible for, let's say, the product, including production, including the figures. By that I don't just mean the number of units, but also the quasi profit-loss calculations for products. Employees who work on a machine used to have it easier. I say now, so don't misunderstand, but the very simple job of the machine operator was along the lines of: All right, I'll just assemble some parts on a piecework basis. It is enriched based on the data we use. What we're doing now, especially in the test, is that we're telling people via tablet and screens and the like: Watch this, here's all your information, all your data on machine utilization, your shifts, your throughput times for products, including rejects. So that means, what happens when? That you can perhaps recognize, okay, in which shifts, at which times, with which products do the most actually failure? And we then pass that on to the employees as their responsibility. This is not always top-down, according to the motto that management knows everything and decides, but rather that you transfer the transparency of the data directly to the employees and that they then begin to understand this and organize themselves from it. This is the case on the store floor, i.e., in production. In everyday office life, however, it is the same. I mean Microsoft Teams and the way we work is changing very rapidly. So, the topic of collaboration, the topic of how data is made available, that everything is somehow becoming much more centralized and that you simply have much more at your disposal. In the last few years, everyone's job has changed massively in a shorter period of time, and that will now happen even faster.
- 7 **I:** Then I had just written down a second point that you had mentioned, namely the energy consumption aspect. Would you say that, in principle, costs are also falling accordingly, but in principle, that digital technologies can now also be used specifically to reduce energy consumption and that, in the final analysis, energy can also be used to increase the company's performance from a financial point of view?
- 8 **R:** Yes, yes, absolutely. So, what I said at the beginning is of course that 222 elements as IT staff so of course the one thing you need is, by that I mean laptops, desktops. With users, for example, you have such a reputation. We are a medium-sized company with 8,000 employees, but we have about 3,000 to 4,000 computers out there, of course, which also consume electricity, simply every day. And that means making sure that the individual devices we distribute are relatively energy efficient. The second major issue, which is of course much more important, is the data center, which is of course the absolute power guzzler. A data center consumes between €3 and 400,000 in electricity per year, which means that there is a clear trend towards outsourcing. The whole issue with the classic cloud providers XXX, XXX, etc., and who, because of their financial strength, are investing heavily in becoming CO2 neutral with their data centers. So that is the other aspect where we as IT can do that, in the direction of self-consumption. The second issue is, of course, the consumption of our machinery. Clever sensor technology means that we can now measure this, of course. Okay, how much consumption, for example, in which operating state can we send them too standby more often? Does it make sense to shut down somewhere? And that can only be done by us. By making the data available. And of course, newer machines are simply cleverer. But you have to imagine or just such successes. Of course, small machines that are over 20, 25, 30 years old are a long way from smart. That is always a challenge.
- 9 **I:** Then I would have one last question about these benefits, so to speak, and that is in terms of if you were to apply CDR now in the company, how do you see that a company could benefit from risk management if CDR is applied?
- 10 **R:** Risk management could be for example: Image damage or similar things that come up in the public if you don't act sustainably now. That could be a risk management issue, for example. We say the risks are enormous. An example: I'm exaggerating now but are you somehow a nuclear power operator and don't know where your waste goes, or that you don't know exactly where your data is and who operates what, because you have three subcontractors and stuff like that. That can cause massive damage to your image, of course, but also to the environment. There are now also sustainability laws. For example, the Supply Chain Tracking Act or what is it called?
- 11 **I:** You mean that the company wants to make sure that the supply chain is also sustainable, i.e., that the other companies in the supply chain also work sustainably.
- 12 **R:** Exactly. The risk is that you will be left behind, that is, in business terms, because more and more customers are attaching more importance to this and we already know that somehow large, we supply all the major car manufacturers in the world. Of course, the first ones are starting to say that you have to fulfill a certain rating. Otherwise, we can't do business with you, because we also have to show the ratings to customers and other authorities. And that is what this law means. So, there is an association. So there are again open platforms where the automotive suppliers and also the car manufacturers can transparently present their quasi supply chains and products, so that you then see per product exactly how much, what the carbon footprint is for each product, in order to say afterwards, so that's a bit like the ultimate goal to say, well, a car costs me exactly as much CO2, because I know every single part, exactly how much it cost in production, so in terms of carbon footprint and so on, and that's something we're being pushed further and further towards. That means the risk is that you won't get future orders if you don't go along.

- 13 **I:** If you now look at the overall picture and compare companies that are now larger or companies that are smaller. Let's take a medium-sized company and a startup as an example. Would you say that when you apply CDR, the opportunities are better at larger companies or, if applicable, are better at smaller companies or does that have no relevance?
- 14 **R:** yes. Now I would say neither. It has advantages and disadvantages. The thing is, the bigger you are, the more difficult, so the more you have to make sure that you follow the theme of course, because you have different publicity, different obligations to customers. As a startup, you are not necessarily subject to all the rules that apply. And as a startup, of course, you don't have the manpower to really put the money to work. You have to see what's available for free in the short term and what I can do better right from the start. Compared to medium-sized businesses, which tells me yes, of course I have an existing environment and have to see how I can make it transparent. You have to weigh up whether there is the possibility to say, if necessary: Yes, well, I'll hire three or four people for this who won't do anything else except follow it up. Of course, a small company like this can't do that. That's why I don't think you can make a general statement like that.
- 15 **I:** You said that people are looking in the direction of US providers, especially in the data center. So, something like XXX, XXX, whatever. Um, is it the case in your company that you also pay attention to whether the data center is operated completely with renewable energies, for example? It's also an interesting comparison in terms of data protection.
- 16 **R:** The answer is yes, of course, because it is also the case that if I choose to outsource my data center, I can write that into my CO2 balance in a positive way, so to speak. It's kind of regulated that way. Someone else then produces it for me. But of course, it is effective, but of course efficient. So of course, we are looking into it. And the second question is a bit related to data protection. Soon you will have to say okay, you will go to a certain region. That is, you usually say, I want to have it in Europe with a large cloud provider. I know, here there are of course also many efforts after the sovereign cloud, that is here for example the XXX and so but there is not really 100% yet. But effectively you have to pick that then that it becomes Europe and if it's in Europe then it's mostly going to sit in Frankfurt. Then it's mostly unnecessary because then it's only on German ground.
- 17 **I:** How could CDR be implemented at your company? Who would take care of it in your company? Would it fall under the sustainability or CSR department? Or IT department, data protection, what ideas are there?
- 18 **R:** None in particular. It's currently every department in our company a little bit. So, let's say there is no department that looks at it completely. So, our quality management, for example, is tracking part of it, then the issue of laws, power consumption, and the whole sustainability issue. That is then with us in the facility management area, i.e., building management. Then there's purchasing, which has the other topic with the topic of supply chains, and that also applies to sales to customers. But it's not the case that you have one or two or three people centrally, that they form the portfolio from all these topics, we don't have that.
- 19 **I:** Do you think it has advantages to act so decentralized or would it be better to have the manpower?
- 20 **R:** Yes, definitely it would be better to coordinate it centrally.
- 21 **I:** It's a bit about going beyond the law (Beyond Compliance) It's supposed to be a voluntary commitment, just like CSR started in the sense that it's not just about complying with the law, but also about giving something back. What other difficulties are there in implementing this? Apart from a lack of manpower or financial requirements, for example?
- 22 **R:** Well, that's actually the main reason. So, because the technologies and so are mostly already there and there are also many people who also see that as important. But if you simply look at it now again, we really do have this, I'll say in regular discussions, and it's always like this when you say you have to make decisions. In business-heavy decisions it is always said, is the topic CSR, that you sit there or whatever and discuss, how important is the topic and do we have to invest more now. Then that always loses out to, I say business decision. Then we also said, as long as we're not forced to do it, we won't do anything for the time being. So that is the "sense of our agency", which must be very high due to regulatory pressure. Yes, then it will be done, but rather not voluntarily. You have to be a very big company to say okay, I'm going to hire 15 people and give them a few million to push this forward.
- 23 **I:** Yes, very interesting. That's also what we've heard from many, many companies. First of all, it's also a little bit in the direction of how big is the company? Can we afford to put time and money into it? Then it would be interesting for me to know: do you think that the whole system should remain in the CSR area so that, for example, companies that are very sustainability-conscious can also implement the whole thing more easily and then integrate their digital technologies? Even if you now go in the direction of data management or ethical decisions, or should that be completely decoupled? That you really look at developing your own code of conduct in the direction of educating employees?
- 24 **R:** Exactly. So, my personal wish would be that it would be so decoupled and lived and handled the same way. But the reality by the fact that we have little time in day-to-day business really or even in strategic appointments, more difficult. For me, a pioneer is XXX, for example. I think they are already doing this. I say so leading such a topic. But as I said, XXX is also simply a global corporation that has somehow specialized in this area. They sell it as a service out of the business, so they've done it cleverly, and as I said, even if you see it purely as a cost factor, because for most people it's just a cost, it will probably remain the same in these silos, with everyone doing a little bit of something. But in my opinion, it should be like that, so for me it should function more as a decoupled unique selling proposition. So, with this whole I say cycle in it and not just partial areas.
- 25 **I:** Okay, and that would be a bit of the future of the whole topic. Do you think that it has to be dependent on legislation or can it also slide a bit in the seemingly voluntary direction that one is forced by the market to implement the whole thing because competitors are implementing CDR?
- 26 **R:** There will be a few companies that are pioneers. But I don't think that's going to achieve market penetration if you leave it like that. I think it's really just going to be tough, and this is my experience over many years, if you set specific deadlines. That means watch out, this sub-area has to be implemented by a certain date and then it's mandatory and it's also kind of checked and stuff like that or if the customer demands it. That's

this "sense of agency" issue. If, of course, the consumer changes and says no, I want you to show me this, and I want to have this proven, that changes it more, of course, but in the end, afterwards, you have to sell products.

1 **Interview-5 (15.03.2023)**

2 **I:** How and what benefits can the active use of CDR trigger for the company?

3 **R:** That's not an easy question, because these benefits don't relate to this aspect at all, so far - for us, the focus is not so great. For us, the focus is on CSR. And of course, this can also be extended to digital media or included in the scope. I think we are now in our third or second year of certification in CSR. According to 26001 it is a sub form of 26000, if I'm not mistaken. That's why the digital benefits or advantages are not so much in the focus for us at the moment. What I have already given you is, of course, the legal scope, which we also have here. We have a GDPR and for me the question is, of course, to what extent the companies that do not have to or do not want to commit to the GDPR, to what extent they actually work against your topic and say "I don't care about you" in the final consequence. If the company is now, for example, under the Cloud Act, then they just get the data they need. But I'm not informed in such detail now that I can say is that something that works against the logic that you're working against or do you say well, if the XXX and the XXX and the XXX (XXX= Big international Cloud providers) of this world do it that way, then that's the way it is. I don't know.

4 **I:** The aspect that you just mentioned in terms of changing regulations that will actually come up more in the future as well. The changes in this direction, sustainability and also the disclosure of data. From your point of view, could you say that even if the regulations are not yet mandatory for some companies, since that also depends on the size of the company, you could say that there are still advantages in the future, since these changes will come?

5 **R:** Sooner or later you could say that legal regulations in this CDR direction will come and companies that companies which do not adapt to it will clearly have disadvantages.

6 **I:** You had just said that the American companies are not following the GDPR. But then the advantage of a German company in a German cloud provider would be, for example, that this data sovereignty is given, which means that special customers are addressed. Precisely because the servers are located on Europe.

7 **R:** Yes, so that is an advantage. We mainly make space available in which third-party providers can provide services. Our customers are, for example, national cloud providers, and sometimes, in addition to corporates, all the customers that move around there. But national cloud providers or so-called Internet service and managed service providers, of course, already participate in this and in these at all. I have here. I guarantee you that the data storage is in Germany, that we are or in Europe, that we have no outsourced processes. And yes, here is a data center, which is certified according to this and that certification standards and thus we ensure that DIN27001 is still with to call, then you know how we deal with the data. The centers are high security areas - how to deal with people's personal data. We record biometric characteristics of which we have everything, which means that an ID card that you have today as a normal citizen probably contains less data than what we have from people, and this creates a story for our customers, who say okay, we do this and that ourselves. They then have their cloud certified for their operation, for example. There are also these different certificates that I don't know everything about from the providers. But I know there is quite a bit there like 14001 or maybe not at all? But in any case, yes. It allows our customers into the business. And so, of course, your thesis is correct. Indirectly also for us, so if we say, "in the future there will be even more cloud demand in the market" and there is a regulation which means that the data actually has to stay in the country according to the sovereignty or at least has to stay in the GDPR space. Then it should be easier for our customers and therefore for us.

8 **I:** And also, in the direction of transparency maybe. I don't know how you handle it. Of course, everything is compliant, but what goes beyond the legal requirements. For example, if there are any difficulties, any failures or something like that, it's all communicated transparently, then you can take advantage of that and maybe use it for your own marketing purposes.

9 **R:** I think not. Corporate Digital Responsibility will not help us if we have a disruption. It won't help us, because that is one of our basic functions, that everything is of course always available in the data center. We guarantee our customers availability of 99.5% per year, so that's Tier 4 availability that we guarantee. No, to be honest, that would not help us. Beyond that, as a critical infrastructure, we have a few things to do anyway. That is, we have to report if we have any severe technical damage and technical issues. But what we don't bring or what we don't do is in the in the structure as a co-locator. We actually stay away from the customers' data, and we do that very deliberately. That is, we are just the interface between customers' data and the carriers, the providers, the ones that run the data highways. But we ourselves deliberately don't look at the data, because otherwise we would have to take many more protective precautions, and we don't want to do that. We only collect or we are only on the data where it is relevant for the operation. What I said before, access protection, etc., so that only authorized persons come here, that's where we need the data. And we keep all of that data locally anyway. That means that we will not have any data that is stored anywhere outside, i.e., personal data that is stored somewhere outside the structures of our campus here. So, they will all be hosted locally. Even if you want to email me and it even goes through XXX, it doesn't go through XXX. So, we use their tools, but we have it completely autonomous.

10 **I:** In this case, you're probably responsible for CDR at your company, if there is someone responsible. After all, you have somebody responsible for CSR, for all the sustainability issues, energy consumption and so on. Do you think it would make more sense to have a specific person responsible for this in the long term, or to anchor it in the company in such a way that everyone plays a part in it, so that in the end you can perhaps also look in the direction of reporting at some point?

11 **R:** We have governance and compliance management, and that's where it's hung. The normal CSR area, i.e., corporate social responsibility, has a completely different coloration. You have to imagine that we say "Hey, society is really in the focus there.". Efficiency is always on a whole other card for data center operators, so resource-conserving revenue. That's part of our business. If we don't do that, we don't make a profit. That's

very simple. But the CSR issue just consciously works with sustainability issues in environmental protection, but also educational issues for employees or in supporting educational institutions here. It is more of a softer thing. There is a social aspect to it. While the other topic area of CDR, we would really attach with us. In the medium term if we have the feeling, we go there one step further. The focus for us in these topics is CSR and not digital. For the reasons I mentioned. We don't have a lot of data touch points and that's why when we talk about your topic, if we were to hang it differently, I certainly wouldn't hang it on the social side with. So, for us, in the broadest sense, it's more on the compliance issue. That's a separate area.

- 12 **I:** Very interesting, because most companies have seen it differently up to now. Especially the larger ones are sorting it more into CSR at the moment. For example, we have a framework that is very similar to CSR, where there is an economic dimension, a social environmental dimension and then the technical dimension. The social dimension, for example, is primarily about retaining employees, even if AI could take over their jobs. Or the environmental dimension is about the unethical recycling of products, of old digital technology hardware. That tends to cross over into the realm then. Would you say that there are more opportunities for revenue generation and access to markets through CDR? So, if you act responsibly, you will have more opportunities to cooperate with other companies?
- 13 **R:** So certainly, it's like that. If you are certified and act according to a certain logic, then you always look for someone who is on eye level. That's also true for CDR and business opportunities. So yes, if CDR has relevance in the market, then there are more business opportunities here. I have to say that when you meet companies that tick a bit similarly and behave a bit similarly and have defined similar rules for themselves, then it definitely helps. Then you are in the same linguistic logic, in the same way of thinking. In the context from sustainability to digital responsibility not quite. That's something I haven't read into your work that deeply either. Of course, if for example jobs are replaced by AI - then I see the point. But I think it will be a long time before that happens here. It's going to take us quite a while. There are probably other industries where it can happen quickly. When I think about it in large companies, where a lot of things are standardized. Of course, AI helps here. It can happen at that point, but certainly not at our company yet.
- 14 **I:** That was perhaps a somewhat radical example, but it's also a bit more about digital inclusion, that everyone has access to digital technology or that data is shared for research purposes, to make processes more efficient and thereby perhaps save energy in the best case or.
- 15 **R:** You have a very interesting topic. We always have to work forward and look at what is actually a requirement or an opportunity that will be reflected in our market tomorrow, and we are actually relatively happy to innovate, and it is already in our DNA to constantly adapt and, if necessary, to change. That's why I'm interested in your research.

#### 1 **Interview-6 (15.05.2023)**

- 2 **R:** You know, a couple of quick comments: You know, at XXX and in a good part of the tech sector, at least from the hardware side, we don't really focus too much on corporate digital responsibility as a terminology. We're really focused on corporate sustainability, and energy efficiency. I mean for all corporate digital responsibility is a term that if I was to talk about it at the manufacturing side of XXX, they wouldn't really get what it is. But the sales and marketing guys would be more familiar with digital responsibility because, you know, or rather digital because they're basically selling our products on the market. And the second thing to be aware of and to really bear in mind, is that XXX above all is really a manufacturing company. You know what we do - We make microchips, we make CPUs. We're increasingly trying to get into GPUs and AI chips, but we make chips, we make products. Our manufacturing operations are extremely large. They're by far the biggest part of the company. So, everything we do is very much about what we're doing in accordance with Moore's Law. Um, and of course at the product side and I get from your survey you guys are focused a little bit more at the product delivery side. Um, in terms of the product delivery side, we are kind of always saying "we are what we make". So basically, without microchips there's no digital, there's no digitization, there's nothing. So, um, a couple of key things there. The third key thing to remember is at the moment, well, it's not a secret and I'll not swap anything here confidential nature. But XXX is going through extremely challenging times at the moment as we try and catch up being quite honest with XXX on the manufacturing side and as we are also in very close competition with XXX on the designer side. So, there are challenges that XXX are going through with regard to economic cuts and job losses and things like this. However, on the sustainability environmental front, there have been no reductions in intentions to continue what we're doing. Any headcount loss in my department or our departments are completely in line with or in fact even less than some of the headcount losses in other parts of the non-core business and in some parts of the manufacturing. So, there's three, three things just to bear in mind which might help you expand context.
- 3 **I:** Thank you very much for that information. Okay. So, then I would start with just a quick comment to a thing that you just said. We're focusing on one side on the offering of products and regarding how this can be affected by CDR. But on the other side we're also focusing on the usage of digital technologies in total. So also, for companies that use digital technologies in total how they do it and if they have a sustainable mindset behind that or if it's still a thing that is not commonly used in this area. So, we have both sides in our thesis.
- 4 **R:** Very quickly on that from our customer base we see very, very much that there's a very keen interest in sustainability. So, a lot of our customers and markets and key market actors, whether it's XXX, XXX, XXX, whatever it might be, are very, very, very insistent on CSR and your topic CDR from business partners and sustainability in form of being as zero net carbon as possible. Now XXX has responded to that. Um, and I'll be very honest with you, there are plenty of people at XXX who are less interested in sustainability than they are in selling XXX chips and holding on to our very powerful position. However, when they see what I notice is that when I explain to them that this is no longer some sort of peripheral nice thing to do, it's core to the business and that our customers are insisting on it - Their mindset changes completely. That's when the rubber hits the road and that's when green is green if you want to say it. Because when you know, I think most people, senior people at XXX now, understand that the key business driver for XXX is not just digitization or clock speed or things like this. It's actual impact on the environment and its carbon footprint. It's also very crucial for the provision of this technology to have a low carbon future because you can't have a low carbon future without digitization. And this is why in addition to this we are getting increasingly or trying and getting increasingly getting our products into other things apart from just data centers and laptops and desktops. Desktops are nearly history now. Um, we've lost the fight, we've lost the battle so far to get our products in the smartphones and there were a couple of reasons why that happened. In 2007, Steve Jobs asked XXX if he

- would if we would make microchips for the for the iPhone and the iPad. We bizarrely said no. Um, so there you go. But anyway, we're pushing a lot of our products into as many Internets of things as possible: smart grids, electric vehicles. Um, you know that we own an electric vehicle technology and mobile Um, so we are very, very aware of the new business opportunities of the core business driver, the digital responsibility, sustainability, corporate responsibility brings to us, you know.
- 5 **I:** Thank you. I will just start with another question then or with one thing that you already mentioned. What you just said is that CSR and CDR are a core part of your business because customers have this preference that as a company you should be responsible while offering digital products and using technologies - So just to make that clear, from a financial perspective. It is a clear benefit for a company because you can have different product offerings in a sustainable direction and therefore create more revenue because more customers want to buy your product.
- 6 **R:** Yeah, you can say it like that. I mean, I think. What's happened here over the last few years is that there are probably three big things which mean that this is no longer a choice for us. I came back to XXX a second time. I was at XXX between 2004 and 2009 and myself and about 4 or 5 other people in the company initiated our global sustainability strategy. And back then with XXX and XXX, they weren't that interested. They didn't understand it. What started happening was that people at XXX realized that the energy efficiency of the chip was crucial to our technology roadmaps. So, they started focusing away just on clock speed. The old mantra was clock speed, the speed of the chip. But by 2007 2008, partly because of regulations like Energy Star and energy efficiency legislation in the EU, they started focusing on energy efficiency. So that's one thing that happened. So, it was done for technological reasons. First and foremost, the hotter the chip, the less it was going to be applicable to mobility and it would run out, run the battery. The hardest working part of any digital piece of equipment like a laptop is the microchip. So anyway, the first thing is that digit a focus on energy efficiency happened. Secondly, customers started in the last few years really demanding low carbon or no carbon chips because they cannot claim to be net zero if the chip is got so much embedded carbon in it or is not actually sustainable. And thirdly, because of the dissemination of digitization, everywhere we see that energy efficient microchips can help energy efficiency in all downstream areas. So, take these three things into consideration. That's the reason why we see the business opportunity of digital corporate responsibility because we have no choice anymore. Technology wise we need responsible behavior for business, environmental, global business, economic wise, and especially reputation wise. And our customers want us to do this. They want responsible behaviors as a company. So, a lot has changed in the last 15 years when there was reluctance amongst XXX executives to do this, there's no reluctance whatsoever. Now they want to do it more and more and more.
- 7 **I:** Thank you very much! I would quickly jump into another point that we figured out in our literature review, that I wanted to ask you about. With CDR, we found out that there is the possibility to, on the one hand, increase revenue and on the other hand decrease revenue for a company. CDR also focuses on the social part. Do you think CDR can decrease costs through employee satisfaction in some way?
- 8 **R:** This is not so clear to us. It's not really very important and clear that this happens. Okay. What's important for us. So, it's not important from a business performance sense. It's important for us from an internal employee stakeholder engagement sense and we do lots of things with XXX volunteering and goodness and voluntary work, which is part of our social part of our corporate social responsibility. So, engaging the stakeholders is the main benefit here. But pretty much everybody at XXX, it's like an army marching toward marching in line with Moore's Law. So, um, you know, basically what you just outlined there is not really a big deal for us, to be quite honest, except the stakeholder engagement. It's nice to have. It is important for our DNA as a company and it's very crucial, but it's not relevant to our economic performance.
- 9 **I:** Thank you. Then I have a last question until we continue with a different section. And my last question is if you consider CDR as a total, would you think that while applying CDR the size of the company matters in regards of the opportunities that the company has?
- 10 **R:** No, I don't think that company size is a metric. I don't think that's a variable. What matters is innovation. Okay, you know, there's a lot of people working at XXX that doesn't make us any more responsible or any less responsible. What's important is the efficiency of our operations, the responsibility we take for our operations and our ability to innovate in line with sustainability requirements. You'll notice and I've seen that we last year launched our net zero strategy for 2040. Most of the world is aiming to do this by 2050. We've dedicated ourselves to doing it by 2040. We are doing that because we believe we can do it, and we could have brought in the date even earlier to 2035, but we didn't believe we could do it by then. So, XXX is a very, data driven company. If we can't do something, we'll try and do it differently. But we're not going to greenwash or promise stuff that we know we can't achieve. And one thing to bear in mind is that for semiconductors, this is relevant to all semiconductor manufacturers. One of the critical gases that we use are perfluorinated gases. And these are very, very high in global warming potential. Well, I mean, if thousand times higher than CO<sub>2</sub>. So, we can't find an alternative to use those gases, we must make a lot of changes in our roadmaps to rely less on those. So, it really requires its innovation, innovation, technology and innovation is the driver for sustainable and digital responsible behavior, not the size of the company. You create CSR and CDR opportunities through innovation efforts.
- 11 **I:** Okay. Thank you very much. A lot of my points have been mentioned as well already, but maybe in a more general term, now that you know a bit about CDR, do you see any challenges at the very beginning when trying to implement it, for example when looking to the future and there might be a legislation that every company has to publish a CDR report, especially about digital technologies similar to the CSR one right now. What challenges of implementation do you see?
- 12 **R:** Yeah, I mean, you know. Interpret this term digital responsibility as because we're manufacturing and because of the things that I just said before, maybe I'm over focusing on the environmental and sustainability carbon climate aspects, but there's a wider social aspect to this which is, you know, our social responsibility in the world to how our technology is used. And so, for example, I see massive challenges here. Um, and I'm not sure if regulators can keep on top of it. It's a real balancing act. It's a real kind of dance, which is, you know, sometimes if we look at two partners between policy government and technology and innovation, these are kind of on the whole constructively stressful partnerships because one wants to go faster than the other, whether it's policy or whether it's technology. But both have to go together. And there's a massive challenge in how that dance or how that partnership is going to develop in the next few years. That challenge is caused, in my view, by the environmental side. It's extremely hard for companies like XXX and XXX to say that they're engaged in digital responsibility when they're continually re-upping, re-upping their products for people to buy new products. So, this is a major challenge to the very essence of being responsible. I'll be very honest, sometimes as someone in the tech sector, I'm quite skeptical at some of the things we're saying because what we're doing is we're making all of

these things. But what we're also doing is, if I'm XXX and I know people at XXX, you know, is it digitally responsible to keep wanting to have everybody buying a new phone? Every 12 to 18 months. That's a big question mark. So that's one aspect. Secondly is, how digitization is doing society any favors, whether it's XXX, XXX, XXX and XXX (Social media Companies). There's a lot of a lot of issues around responsibility there at the user side. Um, online abuse, p\*\*\*\*\*y, um, young people using technology they shouldn't be using. But the whole world is changing so much. So, what is responsible anymore? And if you ask young people using technology what they think is responsible or not, you'll get a very different set of answers than people like parents like me for example. Um, big insistence on privacy, right. Younger people aren't so interested in that anymore. So, it's quite so there's a lot of things in society changing which change the definition of responsibility. And some of those changes have happened because of digitization, but some of them are just happening because of wider economic development issues. So, there are challenges there in terms of perception and what we think is safe anymore. Then the third one is, you know, a big question mark. This is the big thing. This is the mega discussion that's happening in the tech world right now regarding artificial intelligence. Really anybody who tells you that they know how AI is going to affect digital responsibility is either misleading you or they don't know what they're talking about because it is such a massive gaping hole of, we don't know very much. This is probably the biggest challenge because the other couple of items I've mentioned, we know things, we know what problems are. We don't know whether we're able to fix them or not. But with AI, we don't know what the problems are. So, these are three massive challenges going forward on corporate digital responsibility. And the biggest one, because of the gap in information right now is AI.

- 13 **I:** Yeah. And I think that is also a good example for what you just said that government and legislations have to go like in the same direction as technology is going because right now what you see in Europe, for example, the ban of ChatGPT or OpenAI in Italy a few weeks ago, that's not going into the same direction. Just as a simple example.
- 14 **R:** Yeah. And there's a big fear. I was on a call last week, um, and a lot of people are asking EU regulators to regulate AI. I know a lot of EU regulators. I'm pretty certain they don't have the capacity to regulate AI because they don't know anything about it. However, we can't therefore just have a situation where AI is not regulated because some very bad things could happen. It's like a crossroads where there's lots of traffic and it's blocked and it's going to be a very interesting year or so for the Italians to ban certain things like that. I mean, this is the natural impulse of a poorly informed regulator taking a precautionary approach, which is we don't know enough about it. Let's ban it. Well, this is not going to help innovation. Um, but at the same time I can understand the impulses to actually not allow stuff that you don't know enough about. So, this is where actually companies and the tech sector have to really get into a very honest, proactive mode in genuinely talking through these issues and problems with regulators. And there's going to be different attitudes and different companies across the sector on this. There's going to be attitudes from those companies who will say, well, you know what? If we're not getting any regulation, let's not go in and ask for it. Other people will be saying the smarter people like people me, like myself and others who I know smarter in the sense of realizing you cannot sit with your head in the sand hoping because if you don't engage very early and very proactively and very openly in CDR, you will get regulations in 3 or 4 years' time at the very latest that are going to kill your business. So, tech has to wake up to this and engage very constructively. But there's another challenge there, which is you're going to have to deal with a lot of competitors who will not want to be in the same room. Uh, you know, XXX, XXX and I know the CEO of XXX, she was a colleague of mine at XXX way back, XXX, great woman. These guys aren't going to sit in the same room as XXX, or XXX and necessarily talk through their roadmaps. So, there's a challenge there as well.
- 15 **I:** And that is very interesting. Just in terms of time, I'm just going to go through some things that we found out with our survey. Um, for example, in one framework that I used, which is based on a study by Accenture already of 2016 where they first mentioned CDR. Um, I found out that most companies mostly care about digital stewardship and digital transparency the most. When you compare it to, uh, digital inclusion or equity - do you agree with that?
- 16 **R:** Yeah, I do. I think have been less focused on this whole digital responsibility thing because we're manufacturers. However, I think we need to do more here to actually realize that we're core because we're putting the very basic bricks that allow for digitization. We have to take a bigger interest in digital responsibility, because of responsibilities and business opportunities. But you know, there's an element where because we're such a manufacturing technology company, we're not in the same space as a lot of other digital players. But I would agree that those are the two key areas that are probably most interesting. And you know, if you look at the EU, the Digital Services Act in the EU, there's a lot of stuff in there. A lot of big companies are very conversant. I think people like me are less fluent and conversant about that stuff because I'm very much involved with the sustainability manufacturing side of things. I have colleagues at XXX, who would be more aware of digital responsibility and things, you know, so.
- 17 **I:** Okay. Yeah. Thank you very much. Um, maybe one last question. Who do you think would be responsible for something like corporate digital responsibility within a company? Should it be a specific person that coordinates or department or should it be decentralized and having, for example, the legislative side and the IT security and sustainability working together?
- 18 **R:** Yeah, I think it's best to have an integrated in one group. And that group should report no more than one level down from the CEO and preferably right to the CEO. And that's not the case at XXX right now. Um, and it's the case in some other areas. XXX, for example, is chief sustainability officer at XXX is a very, very senior person at XXX. Um, so these, these departments must be integrated from the manufacturing to the customer supply side, and they have to report it to the CEO because for me, if it's not reporting into the CEO, that company is not taking this seriously enough.
- 19 **I:** Okay. Thank you very much. I think you answered more than what we've asked for some of your parts. I could just use them as my conclusion and be done. That was very, very helpful, to be honest.

1 **Interview-7 (16.05.2023)**

- 2 **I:** „Corporate Digital Responsibility“, what would you first understand by that?

3	<b>R:</b> Important. Overdue. GDPR.
4	<b>I:</b> Okay, perfect. We have now defined it based on the literature, that CDR are practices and behaviors that organizations can apply in relation to data and digital technologies in order to act in a socially, economically and environmentally responsible way. Then I would jump briefly to the opportunities of that. If you were to think about it according to that definition, you as a company or basically companies - what performance benefits could the company get from implementing CDR into the strategy. Can you think of a few things?
5	<b>R:</b> First of all, costs and disadvantages, because of course you are limited and leave things out and can't do them and sometimes things are more expensive and associated with costs. So first of all disadvantages, but then eventually advantages, because of course you can clearly signal to the outside world that you take CDR seriously and deal with it responsibly and sustainably.
6	<b>I:</b> Could one say that there are also image advantages to be gained from it and that it also offers advantages in terms of risk management?
7	<b>R:</b> Yes, it sends a positive signal. Definitely. It can offer a positive positioning.
8	<b>I:</b> Then one more question. We have found out, based on the literature, some benefits in terms of cost reduction and in terms of revenue increase through CDR. I would now ask questions about that and I would like you to say to what extent you see that as well or maybe not. On the one hand, we have identified better access to certain markets and product differentiation as possible aspects that increase turnover. Would you say that through responsible behavior in the use of digital technologies, one can generate more turnover through these aspects?
9	<b>R:</b> So, opening up new markets, I don't see that in your first point. No, actually rather not. In classic tenders, which we don't do, I could imagine that it would offer an advantage at some point and it can generally help in sales that any stakeholders who have concerns can be better picked up and involved.
10	<b>I:</b> Thank you very much. To the outside world, of course, it is becoming more and more important how responsibly a company acts and accordingly you also want to position yourself on the labor market to a certain extent. Would you say that if you show this responsible and ethical behavior with digital technologies, you will be considered a better employer on the labor market?
11	<b>R:</b> I don't think it's there yet. In the future, but certainly. I think very few people are aware of that. It is relevant in the technical field and in very few companies and application areas. I'm thinking of the five XXX employees who left the company because of AI. But it will come in the future. Definitely not for a long time yet.
12	<b>I:</b> Okay, perfect. Thank you very much. Then I have one last question. If you look at the topic of corporate digital responsibility in general and see the opportunities that we have just discussed. Would you say there is a difference in the opportunities that a company has through CDR based on the size of the company? For example, startups and corporations.
13	<b>R:</b> Yes, absolutely. So, when I think about the consumers or the end customers, etc., the impact of large companies is of course completely different from that of small ones. In the case of the large ones, completely different things are demanded, both by customers and by the authorities. You can have more advantages, but also more disadvantages. Large companies are much more the center of attention. Yes, that is quite different.
14	<b>I:</b> Okay, thank you very much. We have already talked a bit about CDR. If you now imagine that this would have to be introduced in your company, what challenges would there be?
15	<b>R:</b> Yes, of course, it also has to fit the business model. Of course, it has to be compatible. So, if I'm now a CDR money-burning campaign, then that's not good. But I see that as the biggest hurdle. Is it at all possible to make it compatible and then see how far-reaching the impact is? Which areas are affected? When in doubt, I would say that social responsibility goes further or affects more areas than CDR. It goes from: How do employees travel to other topics. I see that digitally; fewer areas are affected. But even if it's not core business, it still affects them all the more and they have to adhere to it very closely. It is less differentiated, but deeper.
16	<b>I:</b> Okay, but in your case, CDR would probably be more core business than CSR. That you look in the direction of ethical and responsible behavior of AI or of data protection transparency, right?
17	<b>R:</b> Absolutely.
18	<b>I:</b> How important do you see the influence of CDR that you also look at different stakeholders: That you have to look at what the customers want or also the employees? Do you think that there is also influence from outside and inside? Does it have to be decided by top management at some point? Or perhaps by the legislator?
19	<b>R:</b> Yes, everything. I see the purchasing processes and the client requirements. It is sometimes the case that the client says, "I want this" and the purchasing department says "Hey, please stick to the following." - A conflict can arise very quickly in various companies. CDR can help align stakeholders. I can quickly imagine scenarios, not with us, but basically where this can happen. It had nothing to do with us, but conflicts can quickly arise where employees go on strike and say, "Hey, no, I won't do that, I won't go that far. That's not right". I see it in the insurance industry. It's extreme.
20	<b>I:</b> Yes, great, thank you. We have now found out that above all the topic of constant monitoring of processes, constant further development and above all the topic of transparency are most important when you look in the direction of CDR compared to digital inclusion or digital education. How do you see that? Do you think it's more of an overall construct or are there individual things that are more important to you now?
21	<b>R:</b> Yes, the issue of transparency. Traceability of decisions is, of course, right at the top of the list.

- 22 **I:** Great. One more thing about the introduction of CDR. Do you think it would be better if it was introduced by one person, e.g., that there is a CDR officer or a certain department? Or does it have to be an overall construct of the whole company when looking at security? How would you implement that?
- 23 **R:** Yes, I think because it really goes so deep compared to other things. For example, which algorithms, which parameterization, etc.? - I don't think one person can go that deep. Of course, he or she can somehow stimulate, manage and anchor it. But we are talking about the overall approach of the technical teams.
- 24 **I:** Then a few additional questions: How would you see the future of CDR?
- 25 **R:** Yes, it will come and become more and more relevant. Definitely important and overdue. It's just totally dangerous, because if we impose regulations on ourselves, then it can happen very quickly that we lose the competitive advantage and then some insurance company from the US or from outside the EU comes along and says "hey, we can do it for half the price now, because we do other things that are forbidden in your country". Then you have your nice regulations, but then you have ruined your own economy and in doubt you have caused much more damage, because everyone gets their services elsewhere, where they adhere even less to the rules.
- 26 **I:** Again, on the point of "changing the regulations" in relation to the future. You say that this can lead to problems when regulations are imposed. If you look at the other side, if companies start to deal with CDR now, when it is still in this voluntary area. Could one say that companies that do this could possibly also create a market advantage for themselves in the future in order to preventively counteract the possible costs of these changes?
- 27 **R:** Absolutely right. So, I was at a presentation last week by a company that does AI certification. EU legislation is in progress. But it hasn't been decided yet and it will probably be delayed again. You're in a very good position if it's integrated into the company's DNA and processes as early as possible - because now you're building it up. If it is possible within the framework, then you should definitely do it and secure competitive advantages early on so that you can decide between left and right. We did that back then, too. We started before the GDPR. We incorporated it beforehand and don't have any huge problems now, otherwise we would have had them. So, if it's possible, definitely take CDR into account as early as possible and always include it, because it might not come until 2027, then you have three years. But if the whole thing is already geared towards that, as early as possible, then that's perfect and brings immense advantages.