

Corporate Digital Responsibility: A New Era for CSR

Fildzah Lutfiyani

Universitas Diponegoro

ABSTRACT: This article examines Corporate Digital Responsibility (CDR) as an emerging extension of Corporate Social Responsibility (CSR) in the digital era. It emphasizes that technological advancements require organizations to adopt responsible digital practices that protect data privacy, ensure cybersecurity, promote digital inclusion, and uphold ethical standards in artificial intelligence (AI) and innovation. As a complement to CSR, CDR addresses ethical, social, and environmental challenges from digital transformation, supporting sustainable development goals. The study explores CDR's conceptual foundations and ethical frameworks, highlighting principles of transparency, accountability, fairness, privacy, and social justice. These principles are implemented through institutional commitment, stakeholder engagement, ethics-by-design approaches, and integration with CSR initiatives. The article outlines CDR's scope, including data responsibility, cybersecurity, digital ethics, inclusion, environmental impacts, regulatory compliance, and governance. The article differentiates CDR from CSR, noting that while CSR addresses broad environmental, social, and economic responsibilities, CDR focuses on digital risks and opportunities. This positions CDR as an essential subset within CSR, aligning digital transformation with sustainability objectives. European examples demonstrate CDR implementation through regulatory frameworks, corporate governance codes, and public policies. The article identifies key development areas: creating standardized metrics to evaluate CDR effectiveness, enhancing cross-sector collaboration, expanding research on ethical AI deployment and algorithmic bias mitigation, promoting digital literacy initiatives, and aligning CDR with global sustainability agendas like the UN Sustainable Development Goals. This approach ensures digital practices contribute to societal objectives while maintaining corporate accountability.

KEYWORDS: Corporate Digital Responsibility, Corporate Social Responsibility, Digital Transformation, Stakeholder Engagement, Sustainable Development,

I. INTRODUCTION

Technological development has had a broad impact on society, the environment, and business. For society, technology facilitates access to information, communication, and services that improve the quality of life and accelerate social and economic flows. However, technological advancements also bring challenges, such as the digital divide, privacy risks, and the potential spread of false or manipulative information. In terms of the environment, renewable energy technologies such as photovoltaic panels help mitigate the energy crisis and climate change, but large-scale development can affect local ecosystems, as seen in major photovoltaic plant projects in desert areas that impact the ecological conditions around project sites (Wu et al., 2024). Furthermore, there is a risk of greenwashing in the oil and gas industry, which can mislead the public regarding the true environmental impact of these new technologies (Scanlan, 2017; Yoganandham et al., 2024). In the business domain, technology drives innovation and operational efficiency, such as the adoption of blockchain in supply chains, which enhances transparency and company performance, as well as renewable energy technologies that help boost the performance of the energy industry and support sustainable economic growth (Dong et al., 2024; Liu et al., 2016). Nonetheless, business practices that rely on technology must integrate social responsibility and sustainability through robust CSR programs to maximize their positive impact and prevent practices that are merely cosmetic or constitute greenwashing (Ashurov et al., 2024; Luke, 2013). Thus, the development of technology offers significant opportunities and responsibilities to create balanced and sustainable benefits for society, the environment, and the business world as a whole.

With technological advancements, the implementation of corporate responsibility for environmental and social impacts can be improved. As technology continues to develop, companies have a new responsibility to protect the data and privacy of the public as users or consumers of the company. Personal data and privacy regulations are highly necessary, considering that personal data contain important information about individuals that can affect their lives. For companies, this personal data becomes valuable information, but at the same time, it is also a burden to maintain the confidentiality of the data and ensure that it is used appropriately by the companies. Therefore, corporate digital responsibility in the era of digital transformation is extremely

Corporate Digital Responsibility: A New Era for CSR

important for various strategic, operational, and social reasons. With digital transformation becoming increasingly widespread, companies must not only focus on technological innovation but also ensure that technology is used ethically and safely.

The new responsibility in question is Corporate Digital Responsibility (CDR), which refers to a company's digital responsibility toward society, positively impacting the economy, society, and environment. The roles of CDR also influence the development of a company's business. This has led to several reasons why CDR is important for a company. First, digital responsibility helps companies maintain their reputation and earn customers' trust. In the digital era, customer data are highly valuable and often targeted by cyberattacks. Companies that are digitally responsible will strictly protect this data, comply with data protection regulations, and be transparent about how they manage customer information. Second, digital responsibility supports long-term business sustainability. Risks related to security breaches, data misuse, and unethical business practices can result in significant financial and legal losses. By implementing the right policies and technologies, companies can minimize these risks and ensure that their digital transformation does not undermine the company's value. Third, companies play a social role in building a healthy and inclusive digital ecosystem. Digital responsibility involves protecting against the spread of false information, promoting digital literacy among employees and customers, and ensuring fair access to technology for all. Fourth, digital responsibility also includes compliance with evolving international regulations and standards, such as the GDPR in Europe, which demands transparency and accountability in digital data management.

If a company fails to uphold its digital responsibilities in the digital transformation era, it risks experiencing various significant negative impacts. One of the main consequences is the loss of customer trust, as poorly managed personal data and sensitive information can create a sense of insecurity among customers. This directly affects customer loyalty and the company's reputation, both of which are difficult to restore once they are damaged. Additionally, the company may face legal risks and fines for non-compliance with data protection regulations, such as the GDPR, leading to substantial financial losses. Operational disruptions are also a consequence that cannot be ignored, as cybersecurity incidents resulting from weak digital responsibility can disrupt business processes and decrease productivity. Furthermore, a lack of digital responsibility can lead to social and ethical issues, such as the spread of false information and unfair access to technology, which harm society at large and diminish the value of sustainability. Therefore, failing to take digital responsibility seriously can threaten the continuity of a business and its positive contribution to a healthy and sustainable digital ecosystem. Digital responsibility is an essential part of an effective digital transformation strategy because it helps companies maintain trust, reduce risk, fulfill legal obligations, and contribute to a sustainable and equitable digital society. This study discusses the importance of CDR for companies towards consumers or the general public, as well as understanding the differences between CSR and CDR in terms of scope and the roles they play in contributing to sustainable development.

II. RESEARCH METHOD

This study uses a Systematic Literature Review (SLR) to examine Corporate Digital Responsibility (CDR) and its connection to Corporate Social Responsibility (CSR) in sustainable development. The SLR method systematically helps to find and analyze key studies on CDR and CSR. It explores why CDR matters to companies, consumers, and the public, and how CDR relates to CSR. The review includes studies from the last decade focusing on CDR, CSR, or both in the ethical, social, environmental, and governance areas. Each study was evaluated through its title, abstract, and full text to identify key themes. Data were collected on definitions, ethical principles, strategies, regulations, and impacts on sustainable development. The SLR reveals patterns and trends, showing how CDR complements CSR in addressing digital challenges such as data privacy, cybersecurity, digital inclusion, and ethical AI. This study examines the ethical frameworks, stakeholder engagement, and corporate governance in CDR. This methodology provides an evidence-based analysis of CDR as a key component of modern corporate responsibility, demonstrating its role in promoting ethical, social, and environmental responsibility in the digital era.

III. RESULTS AND DISCUSSION

A. A Review of Corporate Digital Responsibility (CDR)

Corporate digital responsibility (CDR) refers to the ethical approach businesses take to manage their digital transformation and data use, ensuring accountability, transparency, and sustainability in digital activities. CDR encompasses corporate actions related to data privacy, cyber security, digital inclusion, and environmental impact of digital technologies. This signifies a company's commitment to comply with legal and regulatory frameworks and proactively address the societal and ethical implications of its digital operations.

The importance of corporate digital responsibility has grown with the digitalization of businesses, as companies increasingly rely on digital data and technologies. Responsible digital practices build consumer trust, mitigate the risks associated with data breaches and promote sustainable digital innovation. Furthermore, CDR enhances corporate reputation, aligns with stakeholder expectations, and helps companies ethically and sustainably navigate complex digital landscapes. This reflects a broader trend of corporate social responsibility adapted to the digital age, highlighting the intersection of technology, ethics, and business practices.

Corporate Digital Responsibility: A New Era for CSR

Corporate Digital Responsibility (CDR) can be established and operationalized within organizations through a synergistic combination of institutional commitment, ethical frameworks, stakeholder engagement, and strategic integration with broader Corporate Social Responsibility (CSR) initiatives. Institutional entrepreneurs play a pivotal role in legitimizing CDR as a critical dimension of responsible digital innovation by framing it as a business priority and fostering corporate commitment to ethical digital practices through discursive, relational, and material efforts (Trittin-Ulbrich & Böckel, 2022). While CDR mechanisms are often embedded within existing CSR frameworks, particularly in areas such as responsible data use, privacy, and ethical technology deployment, effective implementation requires transcending traditional CSR boundaries to address the unique challenges posed by digital technologies and data responsibility, thereby adopting more comprehensive societal approaches (Van Der Merwe & Al Achkar, 2022). Central to this process is stakeholder engagement, especially with vulnerable consumer segments, where co-creation and market-oriented strategies ensure alignment with consumer needs and mitigate data risks (Liyanaarachchi et al., 2020). Furthermore, the development of ethical guidelines that incorporate the implications of digital transformation and artificial intelligence (AI), particularly through ethics-by-design principles, supports the use of trustworthy AI, human rights protection and sustainability (Weber-Lewerenz, 2021). The adoption of Digital Social Responsibility (DSR), a related concept, has been shown to enhance customer engagement, CSR performance, and strategic outcomes, thereby demonstrating that embedding digital responsibility into corporate strategy can generate competitive advantages and legitimacy (Gallardo-Vázquez et al., 2019; Khattak & Yousaf, 2021). In addition, leveraging digital transformation across value chains contributes to CSR performance by strengthening internal controls, pollution management, and operational efficiency, underscoring the need for holistic integration across manufacturing, marketing, and management functions (Na et al., 2022). Finally, embedding sustainability, social responsibility, and digital ethics into organizational policies and culture fosters awareness, accountability, and proactive governance (Lu et al., 2018). In summary, the creation of a CDR requires a multi-stakeholder effort that legitimizes responsible digital innovation, integrates digital ethics with CSR, develops robust ethical frameworks, engages diverse consumer groups, and embeds these practices into organizational culture and strategy. This enables companies to manage digital risks responsibly while leveraging digitalization to enhance social, strategic, and environmental outcomes.

The scope of corporate digital responsibility (CDR) encompasses a wide range of areas that reflect a company's ethical commitment and accountability within the digital domain. Although the provided context does not explicitly delineate the scope, a general understanding of CDR typically includes the following dimensions: Data Responsibility, which involves ensuring responsible data collection, processing, storage, and usage, with an emphasis on data privacy, protection, and ethical use; Cybersecurity, which entails implementing robust digital security measures to protect digital assets and data from breaches and misuse; Digital Ethics, which involves adopting ethical principles in digital innovation and technologies such as AI, ensuring transparency, fairness, and respect for human rights; Digital Inclusion, which promotes equitable access to digital technologies and addresses digital divides among stakeholders; Environmental Impact, which considers the sustainability and environmental implications of digital operations and technology use; Stakeholder Engagement, which includes involving vulnerable consumers and other stakeholders in the design and implementation of digital responsibility initiatives; Compliance and Governance, which involves aligning with legal frameworks, industry standards, and internal policies for trustworthy digital transformation; and Integration with Corporate Social Responsibility (CSR), which extends traditional CSR practices to encompass digital-centric issues and challenges. This broad scope highlights CDR as a multifaceted concept that encompasses technical, ethical, social, environmental, and managerial dimensions to ensure that digital transformation benefits society while mitigating related risks.

B. Ethics of CDR

Ethics is the branch of philosophy that deals with the principles of right and wrong behavior, guiding individuals and organizations in making moral choices. It encompasses the standards and values that govern conduct and aims to determine what is morally permissible, obligatory, or forbidden. Ethics serves as a framework for evaluating actions and decisions based on concepts such as fairness, justice, responsibility, and respect. Ethics are essential because they provide a foundation of trust, integrity, and accountability in both personal and professional spheres. It helps navigate complex situations where rules may be ambiguous, ensuring that decisions are made not solely based on legal compliance or self-interest but also on broader considerations of social good and human dignity. Ethics fosters harmonious relationships and sustainable practices by encouraging individuals and organizations to reflect on the impact of their actions on others and their environment.

In Corporate digital responsibility (CDR), ethics encompass the essential principles that guide organizations to act responsibly and morally in their digital practices. Central to these ethics is the responsible use of data, which involves unbiased acquisition, secure protection, and diligent maintenance of data. Transparency and accountability are crucial to ensure that organizations openly communicate their digital operations and address any ethical concerns that arise. Respect for privacy and fairness is paramount, particularly in managing data and applying artificial intelligence (AI) in ways that avoid discrimination and uphold the principles of justice. Ethical AI deployment and digital innovation require the application of ethics-by-design principles to respect human rights and promote the societal well-being. CDR ethics also emphasize social justice and inclusion by bridging the digital

Corporate Digital Responsibility: A New Era for CSR

divide and promoting equitable access to digital technology. Engaging multiple stakeholders, including vulnerable groups, ensures that organizational objectives are balanced with ethical responsibilities. Furthermore, CDR extends ethical considerations to the environmental and societal impacts of digital technologies and advocates sustainable digital practices. Many organizations have developed tailored digital ethics codes to foster transparency, ethical reflection and trust in their digital operations. Overall, the ethics of corporate digital responsibility embed moral values into the governance and use of digital technologies, protecting stakeholder rights, promoting fairness, and advancing societal good in the digital age.

The ethics of Corporate Digital Responsibility (CDR) revolve around principles that ensure that organizations act ethically and responsibly in their digital practices and innovations. Critical aspects of CDR include responsible data use, which emphasizes unbiased acquisition, secure protection, and careful maintenance of data to safeguard their integrity and privacy (Cheng & Zhang, 2023). Transparency and accountability are equally vital, requiring companies to disclose digital operations and establish mechanisms to address ethical concerns arising from technological deployment (Lobschat et al., 2019). Respect for privacy and fairness is fundamental, particularly in data handling and artificial intelligence (AI) applications, to prevent discrimination and unjust outcomes (Wirtz et al. 2022). Ethical AI and digital innovation demand ethics-by-design approaches that embed moral intelligence into technologies, ensuring respect for human rights, dignity, and social well-being (Scarpi & Pantano, 2024; Weber-Lewerenz 2021). Furthermore, CDR encompasses social justice and inclusion by addressing digital divides and promoting equitable access to digital resources (Ashurov et al., 2024; W. Luke, 2013). Multi-stakeholder engagement strengthens ethical responsibility by incorporating diverse perspectives from consumers, vulnerable groups, employees, and regulators to balance organizational objectives and societal needs (Trittin-Ulbrich & Böckel, 2022). Ethical responsibility also extends to environmental and societal considerations, requiring the sustainable use of digital resources and the mitigation of environmental impacts (Stahl, 2024). To institutionalize these values, organizations may develop tailored codes of digital ethics, such as Merck KGaA's Code of Digital Ethics, which fosters transparency, ethical reflection, and trust in digital innovation (Becker et al. 2022). Collectively, these aspects embed moral values into the design, governance, and operation of digital technologies, enabling companies to manage digital transformation responsibly while protecting stakeholder rights, promoting fairness, and contributing to societal well-being in the digital era (Scarpi & Pantano, 2024; Van Der Merwe & Al Achkar, 2022).

The ethical frameworks applicable to digital product development for enhancing accountability include:

1. Frameworks emphasize accountability and transparency principles, guiding responsible AI development by promoting transparency in algorithms, decision-making, and data use while clearly defining stakeholder roles to foster a culture of accountability throughout the AI lifecycle (Meduri et al., 2024).
2. Operationalization frameworks map ethical AI principles onto the product lifecycle, should be combined with governance models that clarify responsibilities and embed accountability mechanisms at each stage of development and deployment (Georgieva et al., 2022).
3. Human rights-based ethical AI guidelines frame accountability, in terms of adherence to equality, participation, and privacy rights, calling for enforceable standards beyond voluntary disclosures to ensure that the social good is protected (Fukuda-Parr & Gibbons, 2021).
4. Contextualized case-based ethical frameworks, integrate ethics by design into software development pipelines, embedding principles such as fairness, trust, robustness, and accountability proactively rather than as an afterthought (Amugongo et al., 2023).
5. Strategies promoting transparency and fairness, explainable AI (XAI), open data sharing, fairness metrics, human-in-the-loop governance, and regulatory compliance underpin accountable AI development and reflect ethically sound decision-making (Akinrinola et al., 2024).

These frameworks collectively help digital product developers embed accountability through structured governance, transparency, stakeholder engagement, and actionable ethical principles contextualized to product and application domains.

The effectiveness of corporate ethical guidelines for digital operations can be evaluated using various complementary approaches that ensure compliance and continuous improvement. A customized Code of Digital Ethics with explicit principles serves as a foundation for ethical reflection, evaluation, and decision-making, while monitoring adherence to this code provides insights into compliance and areas requiring enhancement (Becker et al., 2022). Operationalizing ethics through structured frameworks embedded in the design and development lifecycle enables ongoing assessment of risks and impacts, ensuring that ethical principles are translated into practice (Georgieva et al., 2022; Peters et al., 2020). Qualitative evaluations, including case studies and expert interviews, further illuminate the practical application of ethical norms in emerging contexts such as artificial intelligence (AI) and construction engineering (Weber-Lewerenz 2021). Tangible indicators, such as stakeholder trust, transparency, accountability metrics, and records of unethical digital behavior, provide measurable evidence of effectiveness, whereas periodic audits, ethics committee reviews, and training programs reinforce continuous assessment. Alignment with regulatory frameworks and international human rights principles also verifies that ethical guidelines meet societal and legal expectations (Fukuda-Parr & Gibbons, 2021). Effective implementation requires organizations to develop comprehensive ethical codes tailored to specific digital contexts, such as those in digital health and AI services, emphasizing user safety, privacy, and

Corporate Digital Responsibility: A New Era for CSR

global standards (Joerin et al., 2020). Integrating ethical analysis frameworks into technology design ensures accountability, transparency, and fairness from the outset (Peters et al., 2020), whereas embedding governance models clarifies responsibilities across the digital service lifecycle, facilitating oversight and ethical decision-making (Georgieva et al., 2022). Engaging diverse stakeholders, including vulnerable populations, in co-creating ethical frameworks strengthens inclusivity and addresses biases and inequalities (Vatankhah et al., 2024). Continuous training and competency development in ethics, data literacy, and digital skills foster an organizational culture of responsibility (Božić, 2023), and adherence to evolving regulatory requirements, alongside robust data management practices, ensures compliance and builds trust (Adekugbe & Ibeh, 2024; Cascella et al., 2025). Collectively, these practices and evaluation mechanisms create a comprehensive system that promotes transparent, accountable, and socially responsible digital operations that align corporate innovation with ethical principles and societal expectations.

C. A Comparison of CSR and CDR

Corporate Social Responsibility (CSR) and Corporate Digital Responsibility (CDR) differ primarily in their focus and scope. CSR is a broad concept that addresses a company's overall responsibilities towards society, encompassing environmental sustainability, social equity, and economic impact by managing stakeholder relationships and contributing to societal well-being. It involves accountability mechanisms related to ecological sustainability, social performance and governance practices (Gholami, 2011; Van Der Merwe & Al Achkar, 2022).

In contrast, CDR specifically relates to the ethical and responsible use of digital technologies, data, and AI in corporate operations. It focuses on managing digital risks and opportunities, such as data privacy, cybersecurity, digital inclusion, transparency, and the ethical ramifications of digital transformation initiatives. CDR seeks to complement CSR by addressing the emerging challenges posed by digitization and ensuring that companies uphold human and social values in the digital realm (Van Der Merwe & Al Achkar, 2022; Weber-Lewerenz & Traverso, 2024).

While CSR broadly encompasses environmental and social challenges, CDR focuses on digital ethics, governance, and sustainability, considering the rapid technological evolution. Both concepts call for corporate accountability but differ in focus: CSR has a wider societal lens, and CDR has a technology-centered mandate. Importantly, CDR can be viewed as an evolving extension or specialization within the wider CSR framework, addressing new responsibilities in the digital age (Van Der Merwe & Al Achkar, 2022; Weber-Lewerenz & Traverso, 2024).

Corporate Social Responsibility (CSR) is a concept in which companies integrate social and environmental concerns into their business operations and interactions with stakeholders. CSR reflects the responsibility that companies have not only to seek economic profit but also to make a positive contribution to society and the surrounding environment. This includes various initiatives, such as environmental conservation, improving employee welfare, community development, implementing ethical business practices, and ensuring transparency and accountability. By carrying out CSR, companies strive to achieve a balance between economic growth, social responsibility, and sustainable environmental preservation.

Corporate Social Responsibility (CSR) encompasses a multidimensional framework that integrates environmental, social, ethical, economic, and stakeholder-oriented commitments into corporate strategy and practice. A central focus is environmental sustainability, where organizations strive to minimize their ecological impact through resource conservation, waste reduction, pollution control, and proactive measures to address climate change. Equally important is social responsibility, which emphasizes fair labor practices, employee welfare, community development, respect for human rights, and the promotion of diversity and inclusivity as essential components of sustainable growth. Ethical governance is another pillar of CSR, requiring transparency, accountability, anti-corruption measures, and responsible corporate governance structures to ensure integrity in decision-making. Economic responsibility highlights the role of corporations in contributing to broader economic development through fair trade, ethical sourcing, and creating shared value that benefits both businesses and society. Finally, stakeholder engagement underscores the importance of building constructive relationships with employees, customers, investors, suppliers, and local communities; aligning corporate practices with societal expectations; and fostering trust and legitimacy. Collectively, these dimensions illustrate that CSR is not merely a peripheral activity but a strategic imperative that integrates sustainability, ethics, and inclusivity into the core of organizational operations, thereby enhancing long-term competitiveness and societal well-being. These focus areas aim to integrate social, environmental, and economic concerns into corporate strategies to foster sustainable and ethical practices.

Corporate Digital Responsibility (CDR) refers to a company's ethical commitment and accountability in managing digital technologies and data. It encompasses responsible practices related to data privacy, cybersecurity, digital inclusion, transparency, and ensuring that digital operations do not harm stakeholders or the society. CDR involves protecting customer and employee information, preventing digital abuse, promoting equitable access to technology, and complying with digital regulations. It aims to build trust and uphold corporate values in the digital age by aligning technology with broader social and ethical standards.

Corporate Digital Responsibility (CDR) encompasses a broad range of dimensions that collectively define how organizations manage ethical, social, and environmental challenges in the digital era. A primary focus lies in data privacy and security, where companies are expected to ensure robust protection of personal and sensitive information throughout its collection, processing, and storage, while adhering to applicable legal frameworks and ethical standards. Equally important is the ethical use of

Corporate Digital Responsibility: A New Era for CSR

technology, particularly emerging innovations such as artificial intelligence (AI), which must be deployed responsibly to avoid the perpetuation of bias, discrimination, or harm. Digital inclusion and accessibility represent another critical dimension, requiring organizations to promote equitable access to digital tools and services for diverse populations, including marginalized or underserved groups, thereby reducing the digital divide. Transparency and accountability further strengthen CDR by obligating firms to disclose their digital practices, data policies, and technology applications while establishing mechanisms to hold themselves accountable for breaches or failures. Environmental impact is also integral, as companies must manage the ecological footprint of digital operations, including energy consumption, carbon emissions and electronic waste. Cybersecurity adds another layer of responsibility, demanding the protection of digital assets, infrastructure, and systems from evolving cyber threats. Finally, stakeholder engagement ensures that employees, customers, investors, regulators, and communities are actively involved in shaping digital strategies and ethical considerations, fostering trust and legitimacy in the process. Collectively, these dimensions illustrate that CDR is not merely a compliance exercise but a strategic framework that balances technological innovation with ethical stewardship, social responsibility, and sustainable impact, thereby enabling corporations to thrive responsibly in the digital age.

Examples of the implementation of Corporate Digital Responsibility (CDR) in European countries are evident through a combination of regulatory frameworks, corporate governance practices, and public policy initiatives that integrate digital ethics, transparency, and sustainability into organizational operations. At the supranational level, the European Union has played a pivotal role in harmonizing governance and social responsibility frameworks across member states, issuing laws and recommendations that embed principles of transparency, stakeholder engagement, and digital accountability. These measures obligate firms to manage digital data and technological impacts responsibly, thereby reinforcing CDR as a regulatory priority (Cernat, 2004; Lannoo, 1999). At the corporate level, many European companies have incorporated digital responsibility into broader governance codes that emphasize accountability, ethical standards and responsible innovation. Such codes mandate ethical technology use and privacy safeguards, positioning digital responsibility as a core element of corporate culture and risk management (Wieland, 2005). Public policy initiatives, particularly in Northern European and Scandinavian countries, further strengthen CDR by institutionalizing policies that overlap with CSR principles and emphasize partnerships among the government, businesses, and civil society. Denmark and Finland, for instance, have demonstrated leadership in deploying efficient e-government services, reflecting their commitment to digital inclusion, transparency, and ethical technology use in both the public and corporate sectors (Albareda et al., 2007; Knudsen et al., 2015). Moreover, responsible innovation in business has been advanced through EU-funded projects such as SATORI, which encourage enterprises to integrate ethical evaluation practices and sustainability considerations into digital transformation strategies, thereby fostering corporate cultures that prioritize ethics and stakeholder engagement (Gurzawska, 2021). These examples illustrate Europe's multilevel approach to implementing CDR, where regulatory measures, governance reforms, and collaborative policy frameworks converge to comprehensively address the ethical, social, and environmental dimensions of digital business operations.

From these comparisons, both CSR and CDR are addressed to advance sustainable development, as both emphasize ethical, social, and environmental stewardship by businesses in the context of evolving societal expectations. Corporate Social Responsibility (CSR) and Corporate Digital Responsibility (CDR) share a common foundation in sustainability, as both concepts emphasize a company's responsibility toward society and the environment in supporting long-term development. CSR and CDR represent interconnected pillars of modern corporate responsibility, ensuring that organizations not only meet societal expectations but also adapt responsibly to the ethical, social, and environmental challenges of the digital transformation. In essence, the correlation between CSR and CDR in sustainable development lies in their mutual reinforcement: CSR establishes the ethical and social foundation for sustainable business, whereas CDR expands these principles into the digital realm, ensuring that technological advancements contribute positively and responsibly to sustainable development.

CSR traditionally addresses the broad dimensions of social responsibility, environmental stewardship, and ethical business conduct, whereas CDR extends these responsibilities into the digital domain by focusing on ethical technology use, data privacy, and digital equity. Specifically, CDR uses CSR mechanisms to implement responsible data use and ethical digital practices, reflecting the evolving relationship between technology, ethics, and society. It addresses contemporary challenges, such as data privacy, ethical AI use, and cybersecurity, in line with CSR's focus on transparency, accountability, and stakeholder welfare. Hence, CDR represents a specialization of CSR that focuses on responsible digital transformation and data management, aligning with the core CSR mission of mitigating social and environmental risks and enhancing corporate accountability (Lu et al., 2018; Van Der Merwe & Al Achkar, 2022). Their roles are complementary; CSR provides the overarching framework for responsible corporate behavior, whereas CDR responds to the emerging challenges of the digital age, such as responsible data management, cybersecurity, and digital inclusion. This dual approach ensures that sustainability strategies remain comprehensive and adaptive to technological progress (Lu et al., 2018; Van Der Merwe & Al Achkar, 2022). CSR has long been recognized as a driver of corporate reputation and competitive advantage through enhanced stakeholder trust, and the incorporation of CDR further strengthens this by ensuring transparent management of digital risks and ethical digital innovation, thereby reinforcing the benefits

Corporate Digital Responsibility: A New Era for CSR

of sustainable development (Xuetong et al., 2023). Together, they promote sustainable development by encouraging organizations to integrate environmental, social, and governance (ESG) considerations into their core operations (W. Wu et al., 2024).

CSR and CDR emphasize integrating sustainability and ethical considerations into corporate strategies and governance frameworks, embedding responsibility into business models and decision-making processes. Responsible innovation in digital technologies within the CDR framework aligns with CSR's objective of minimizing negative societal impacts while simultaneously promoting economic growth and environmental sustainability (Gurzawska, 2021; Kleine & Von Hauff, 2009). Moreover, just as CSR advances sustainable development by integrating social and environmental concerns into business practices, CDR ensures that the digital aspect of business supports sustainability goals through ethical technology governance and digital inclusion. Therefore, CDR is viewed as an essential component of CSR in the digital age (Vărzaru et al., 2021).

CONCLUSIONS

This article examines Corporate Digital Responsibility (CDR) as an emerging and essential extension of Corporate Social Responsibility (CSR) in the digital era, highlighting how technological advancements compel companies to adopt responsible digital practices that safeguard data privacy, ensure cybersecurity, promote digital inclusion, and uphold ethical standards in artificial intelligence (AI) and digital innovation. Positioned as a complement to CSR, CDR addresses the unique ethical, social, and environmental challenges posed by digital transformation, thereby reinforcing the objectives of sustainable development. This study reviews the conceptual foundations and ethical frameworks of CDR, emphasizing principles such as transparency, accountability, fairness, respect for privacy, and social justice, and outlines how these principles are operationalized through institutional commitment, stakeholder engagement, ethics-by-design, and integration with CSR strategies. The scope of CDR is discussed in terms of data responsibility, cyber security, digital ethics, inclusion, environmental impact, compliance, and governance. A comparative analysis between CSR and CDR reveals that while CSR broadly encompasses environmental, social, and economic responsibilities, CDR specifically focuses on managing digital risks and opportunities, acting as a specialization within the CSR framework to ensure that digital transformation aligns with corporate sustainability goals. Examples from European countries illustrate the multilevel implementation of CDR through regulatory frameworks, corporate governance codes and public policies promoting ethical digital practices.

The article concludes by suggesting avenues for further enhancement, including the development of standardized metrics and indicators to measure the effectiveness of CDR initiatives, fostering cross-sector collaboration among businesses, regulators, and civil society, expanding research on ethical AI deployment and mitigation of algorithmic biases, promoting capacity-building programs to strengthen digital literacy and ethical awareness, and investigating the interplay between CDR and global sustainability agendas, such as the UN Sustainable Development Goals, to align digital practices with broader societal objectives.

REFERENCES

- 1) Adekugbe, A., & Ibeh, C. (2024). NAVIGATING ETHICAL CHALLENGES IN DATA MANAGEMENT FOR U.S. PROGRAM DEVELOPMENT: BEST PRACTICES AND RECOMMENDATIONS. *International Journal of Management & Entrepreneurship Research*, 6(4), 1023–1033. <https://doi.org/10.51594/ijmer.v6i4.982>
- 2) Akinrinola, O., Ugochukwu, C., Okoye, C., & Ofodile, O. (2024). Navigating and reviewing ethical dilemmas in AI development: Strategies for transparency, fairness, and accountability. *GSC Advanced Research and Reviews*, 18(3), 050–058. <https://doi.org/10.30574/gscarr.2024.18.3.0088>
- 3) Amugongo, L. M., Kriebitz, A., Boch, A., & Lütge, C. (2023). Operationalising AI ethics through the agile software development lifecycle: a case study of AI-enabled mobile health applications. *AI and Ethics*, 5(1), 227–244. <https://doi.org/10.1007/s43681-023-00331-3>
- 4) Ashurov, S., Hassan Musse, O. S., & Abdelhak, T. (2024). Evaluating Corporate Social Responsibility in Achieving Sustainable Development and Social Welfare. *BRICS Journal of Economics*, 5(2), 77–102. <https://doi.org/10.3897/brics-econ.5.e121429>
- 5) Becker, S. J., Nemat, A. T., Lucas, S., Heinitz, R. M., Klevesath, M., & Charton, J. E. (2022). A Code of Digital Ethics: laying the foundation for digital ethics in a science and technology company. *AI & SOCIETY*, 38(6), 2629–2639. <https://doi.org/10.1007/s00146-021-01376-w>
- 6) Božić, V. (2023). Integrated Risk Management and Artificial Intelligence in Hospital. *Journal of AI*, 7(1), 63–80. <https://doi.org/10.61969/jai.1329224>
- 7) Cascella, M., Shariff, M. N., Viswanath, O., Leoni, M. L. G., & Varrassi, G. (2025). Ethical Considerations in the Use of Artificial Intelligence in Pain Medicine. *Current Pain and Headache Reports*, 29(1). <https://doi.org/10.1007/s11916-024-01330-7>
- 8) Cernat, L. (2004). The emerging European corporate governance model: Anglo-Saxon, Continental, or still the century of diversity? *Journal of European Public Policy*, 11(1), 147–166. <https://doi.org/10.1080/1350176042000164343>

Corporate Digital Responsibility: A New Era for CSR

- 9) Cheng, C., & Zhang, M. (2023). Conceptualizing Corporate Digital Responsibility: A Digital Technology Development Perspective. *Sustainability*, 15(3), 2319. <https://doi.org/10.3390/su15032319>
- 10) Dong, X., Hao, X., Cai, C., Li, X., Wang, K., & Zhang, J. (2024). The impact of blockchain adoption in supply chain systems on corporate performance: a technology–organization–environment framework. *Production Planning & Control*, 36(11), 1431–1452. <https://doi.org/10.1080/09537287.2024.2364814>
- 11) Fukuda-Parr, S., & Gibbons, E. (2021). Emerging Consensus on ‘Ethical AI’: Human Rights Critique of Stakeholder Guidelines. *Global Policy*, 12(S6), 32–44. <https://doi.org/10.1111/1758-5899.12965>
- 12) Gallardo-Vázquez, D., Valdez-Juárez, L. E., & Lizcano-Álvarez, J. L. (2019). Corporate Social Responsibility and Intellectual Capital: Sources of Competitiveness and Legitimacy in Organizations’ Management Practices. *Sustainability*, 11(20), 5843. <https://doi.org/10.3390/su11205843>
- 13) Georgieva, I., Timan, T., Lazo, C., & Van Veenstra, A. F. (2022). From AI ethics principles to data science practice: a reflection and a gap analysis based on recent frameworks and practical experience. *AI and Ethics*, 2(4), 697–711. <https://doi.org/10.1007/s43681-021-00127-3>
- 14) Gholami, S. (2011). Value Creation Model through Corporate Social Responsibility (CSR). *International Journal of Business and Management*, 6(9). <https://doi.org/10.5539/ijbm.v6n9p148>
- 15) Gurzawska, A. (2021). Responsible Innovation in Business: Perceptions, Evaluation Practices and Lessons Learnt. *Sustainability*, 13(4), 1826. <https://doi.org/10.3390/su13041826>
- 16) Joerin, A., Rauws, M., Fulmer, R., & Black, V. (2020). Ethical Artificial Intelligence for Digital Health Organizations. *Cureus*, 12(3). <https://doi.org/10.7759/cureus.7202>
- 17) Khattak, A., & Yousaf, Z. (2021). Digital Social Responsibility towards Corporate Social Responsibility and Strategic Performance of Hi-Tech SMEs: Customer Engagement as a Mediator. *Sustainability*, 14(1), 131. <https://doi.org/10.3390/su14010131>
- 18) Kleine, A., & Von Hauff, M. (2009). Sustainability-Driven Implementation of Corporate Social Responsibility: Application of the Integrative Sustainability Triangle. *Journal of Business Ethics*, 85(S3), 517–533. <https://doi.org/10.1007/s10551-009-0212-z>
- 19) Lannoo, K. (1999). A European Perspective on Corporate Governance. *JCMS: Journal of Common Market Studies*, 37(2), 269–294. <https://doi.org/10.1111/1468-5965.00163>
- 20) Liu, W., Zhao, J., Xing, J., Yang, Z., & Xu, X. (2016). Impacts of FDI Renewable Energy Technology Spillover on China’s Energy Industry Performance. *Sustainability*, 8(9), 846. <https://doi.org/10.3390/su8090846>
- 21) Liyanaarachchi, G., Deshpande, S., & Weaven, S. (2020). Market-oriented corporate digital responsibility to manage data vulnerability in online banking. *International Journal of Bank Marketing*, 39(4), 571–591. <https://doi.org/10.1108/ijbm-06-2020-0313>
- 22) Lobschat, L., Mueller, B., Eggers, F., Brandimarte, L., Diefenbach, S., Kroschke, M., & Wirtz, J. (2019). Corporate digital responsibility. *Journal of Business Research*, 122, 875–888. <https://doi.org/10.1016/j.jbusres.2019.10.006>
- 23) Lu, J., Streimikis, J., He, Y., Ren, L., & Lin, W. (2018). Policies to promote Corporate social responsibility (CSR) and assessment of CSR impacts. *E+M Ekonomie a Management*, 22(1), 82–98. <https://doi.org/10.15240/tul/001/2019-1-00>
- 24) Luke, A. (2018). Digital Ethics Now. *Language and Literacy*, 20(3), 185–198. <https://doi.org/10.20360/langandlit29416>
- 25) Luke, T. W. (2013). Corporate Social Responsibility: An Uneasy Merger of Sustainability and Development. *Sustainable Development*, 21(2), 83–91. <https://doi.org/10.1002/sd.1558>
- 26) Meduri, K., Satish, S., Whig, P., & Podicheti, S. (2024). *Accountability and Transparency Ensuring Responsible AI Development* (pp. 83–102). Igi Global. <https://doi.org/10.4018/979-8-3693-4147-6.ch004>
- 27) Na, C., Wang, X., Chen, X., Li, Y., & Li, X. (2022). Digital Transformation of Value Chains and CSR Performance. *Sustainability*, 14(16), 10245. <https://doi.org/10.3390/su141610245>
- 28) Peters, D., Robinson, D., Vold, K., & Calvo, R. A. (2020). Responsible AI—Two Frameworks for Ethical Design Practice. *IEEE Transactions on Technology and Society*, 1(1), 34–47. <https://doi.org/10.1109/tts.2020.2974991>
- 29) Scanlan, S. J. (2017). Framing fracking: scale-shifting and greenwashing risk in the oil and gas industry. *Local Environment*, 22(11), 1311–1337. <https://doi.org/10.1080/13549839.2017.1345877>
- 30) Scarpi, D., & Pantano, E. (2024). “With great power comes great responsibility”: Exploring the role of Corporate Digital Responsibility (CDR) for Artificial Intelligence Responsibility in Retail Service Automation (AIRRSA). *Organizational Dynamics*, 53(2), 101030. <https://doi.org/10.1016/j.orgdyn.2024.101030>
- 31) Sheehy, B., & Farneti, F. (2021). Corporate Social Responsibility, Sustainability, Sustainable Development and Corporate Sustainability: What Is the Difference, and Does It Matter? *Sustainability*, 13(11), 5965. <https://doi.org/10.3390/su13115965>
- 32) Stahl, B. C. (2024). From Corporate Digital Responsibility to Responsible Digital Ecosystems. *Sustainability*, 16(12), 4972. <https://doi.org/10.3390/su16124972>

Corporate Digital Responsibility: A New Era for CSR

- 33) Trittin-Ulbrich, H., & Böckel, A. (2022). Institutional entrepreneurship for responsible digital innovation: The case of corporate digital responsibility. *Creativity and Innovation Management*, 31(3), 447–459. <https://doi.org/10.1111/caim.12513>
- 34) Van Der Merwe, J., & Al Achkar, Z. (2022). Data responsibility, corporate social responsibility, and corporate digital responsibility. *Data & Policy*, 4. <https://doi.org/10.1017/dap.2022.2>
- 35) Vărzaru, A. A., Nicolescu, M. M., & Bocean, C. G. (2021). Rethinking Corporate Responsibility and Sustainability in Light of Economic Performance. *Sustainability*, 13(5), 2660. <https://doi.org/10.3390/su13052660>
- 36) Vatankhah, S., Bamshad, V., Arici, H. E., & Duan, Y. (2024). Ethical implementation of artificial intelligence in the service industries. *The Service Industries Journal*, 44(9–10), 661–685. <https://doi.org/10.1080/02642069.2024.2359077>
- 37) Weber-Lewerenz, B. (2021). Corporate digital responsibility (CDR) in construction engineering\u2014ethical guidelines for the application of digital transformation and artificial intelligence (AI) in user practice. *SN Applied Sciences*, 3(10). <https://doi.org/10.1007/s42452-021-04776-1>
- 38) Weber-Lewerenz, B., & Traverso, M. (2024). How can corporate digital responsibility (<sc>CDR</sc>) be measured in line with corporate social responsibility (<sc>CSR</sc>)? A new theoretical approach in construction 4.0. *Sustainable Development*, 33(1), 287–308. <https://doi.org/10.1002/sd.3094>
- 39) Wieland, J. (2005). Corporate Governance, Values Management, and Standards: A European Perspective. *Business & Society*, 44(1), 74–93. <https://doi.org/10.1177/0007650305274852>
- 40) Wirtz, J., Tarbit, J., Hartley, N., & Kunz, W. H. (2022). Corporate Digital Responsibility in Service Firms and Their Ecosystems. *Journal of Service Research*, 26(2), 173–190. <https://doi.org/10.1177/10946705221130467>
- 41) Wu, L., & Jin, S. (2022). Corporate Social Responsibility and Sustainability: From a Corporate Governance Perspective. *Sustainability*, 14(22), 15457. <https://doi.org/10.3390/su142215457>
- 42) Wu, W., Chen, H., Li, C., Lu, G., Ye, D., Ma, C., Ren, L., & Li, G. (2024). Assessment of the ecological and environmental effects of large-scale photovoltaic development in desert areas. *Scientific Reports*, 14(1). <https://doi.org/10.1038/s41598-024-72860-8>
- 43) Xuetong, W., Hussain, M., Rasool, S. F., & Mohelska, H. (2023). Impact of corporate social responsibility on sustainable competitive advantages: The mediating role of corporate reputation. *Environmental Science and Pollution Research International*, 31(34), 46207–46220. <https://doi.org/10.1007/s11356-023-28192-7>
- 44) Yoganandham, G., Abdul Kareem, A., & Mohammed Imran Khan, E. (2024). Unveiling the Shadows - Corporate Greenwashing and its Multifaceted Impacts on Environment, Society, and Governance - A Macro Economic Theoretical Assessment. *Shanlax International Journal of Arts, Science and Humanities*, 11(S3-Feb), 20–29. <https://doi.org/10.34293/sijash.v11i3-feb.7237>



There is an Open Access article, distributed under the term of the Creative Commons Attribution – Non Commercial 4.0 International (CC BY-NC 4.0) (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits remixing, adapting and building upon the work for non-commercial use, provided the original work is properly cited.