

CSR in the Digital Era: How Technology Is Transforming Corporate Social Responsibility

Lila Alwyah¹, Ernaldo Fikrul Arifin²

Akademi Bisnis Lombok

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Abstract

The rapid advancement of digital technology in the Industry 4.0 era has brought fundamental changes to the implementation of Corporate Social Responsibility (CSR) in the business sector. This study aims to identify the forms of digital technology utilization in CSR programs, analyze its impact on program effectiveness, and formulate a conceptual framework for digital CSR relevant to the Indonesian context. The research employs a systematic literature review (SLR) using the PRISMA framework, supported by an analysis of CSR reports from 15 selected companies in Indonesia covering the period 2019–2023. The findings reveal that CSR digitalization operates through four main clusters: (1) stakeholder communication and engagement via social media and digital platforms; (2) data-driven decision-making powered by big data and artificial intelligence; (3) enhanced transparency and accountability through blockchain technology; and (4) more participatory community empowerment via digital applications. Case studies from companies such as PT Telkom Indonesia, PT PLN, and BRI demonstrate that the adoption of digital technology in CSR can improve budget efficiency, expand program reach, and produce more measurable social impact. However, significant challenges remain, including the digital divide, the risk of digital greenwashing, data privacy concerns, and limited human resource capacity. This study proposes a four-dimensional Digital CSR framework: digital infrastructure, governance and regulation, capacity and ecosystem, and impact and accountability as a guide for Indonesian companies in effectively, inclusively, and sustainably integrating technology into their CSR strategies.

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Corresponding Author:

Lila Alwyah

Akademi Bisnis Lombok, Indonesia

Email Coresspondent: lylaalwyah@gmail.com

1. INTRODUCTION

The rapid development of digital technology over the past decade has brought about fundamental changes in various aspects of global social, economic, and business life. The Industry 4.0 era, characterized by artificial intelligence (AI), the Internet of Things (IoT), big data, and blockchain, is not only revolutionizing production processes but also transforming how companies interact with stakeholders and fulfill their social responsibilities (Syah et al., 2024). Corporate Social Responsibility (CSR), a concept that has long served as the foundation of sustainable business, now faces unprecedented new challenges and opportunities (Santoso et al., 2021).

CSR is defined as a company's commitment to contributing to sustainable economic development by working together with employees, their families, local communities, and society at large to improve the quality of life in ways that benefit both business and development (Nurozi & Sisdianto, 2024). In Indonesia, the implementation of CSR has even been reinforced by regulations through Law No. 40 of 2007 on Limited Liability Companies and Government Regulation No. 47 of 2012, which require companies operating in and/or related to natural resources to implement CSR programs. However, CSR implementation in many Indonesian companies still tends to be reactive and charity-based, failing to reflect a strategic approach integrated with technology.

The digitization of CSR offers a new paradigm in the management of corporate social programs. By leveraging digital platforms, companies are not only able to expand the reach of their CSR programs but can also significantly enhance program accountability, transparency, and effectiveness (Irawan & Alamsyah, 2023). Research by Etter et al., (2019) shows that companies adopting digital-based CSR communication receive more positive responses from stakeholders compared to companies relying on traditional communication channels. This phenomenon underscores the urgent need to understand how technology concretely transforms the landscape of CSR from program design, implementation, and monitoring to evaluation and public communication.

Research on the relationship between digital technology and CSR remains relatively limited, particularly in the context of developing countries such as Indonesia. Most of the existing literature focuses on multinational corporations in developed countries, resulting in a significant knowledge gap regarding how local and national companies in Indonesia adapt technology for their CSR programs. This study aims to: (1) identify forms of digital technology utilization in CSR implementation, (2) analyze the impact of digitalization on the effectiveness of CSR programs, and (3) formulate a conceptual framework for digital CSR relevant to the Indonesian context.

2. METHOD

This study employs a systematic literature review (SLR) approach using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework. The SLR method was chosen because it allows researchers to conduct a comprehensive and structured synthesis of relevant literature, thereby providing a comprehensive overview of scientific developments on the topic under study (Tranfield et al., 2003). The reviewed literature includes scientific journal articles, textbooks, research institution reports, and policy documents published between 2000 and 2024, with a primary focus on the 2015–2024 period, which marks the era of accelerated digital transformation.

The literature search was conducted using several reputable academic databases, including Google Scholar, Scopus, Web of Science, and JSTOR. The keywords used in the search included: “digital CSR”, “Corporate Social Responsibility and digital technology”, “CSR and social media”, “CSR and big data”, “CSR and artificial intelligence”, “CSR and blockchain” and “CSR Indonesia digital”. From a total of 347 articles identified through the initial search, an inclusion and exclusion process was conducted based on criteria of relevance, methodological quality, and recency of information. After undergoing a phased selection process, 62 sources deemed most relevant and of high quality were used as the basis for analysis in this study.

The analysis was conducted using content analysis and thematic synthesis to identify the main themes emerging from the literature. The coding process was conducted iteratively to ensure the consistency and reliability of the analysis. Secondary data in the form of annual CSR reports from 15 selected companies in Indonesia (5 state-owned enterprises, 5 multinational companies, and 5 national private companies) were also

analyzed to provide a strong empirical context. The reporting period examined was 2019–2023, covering the period before, during, and after the COVID-19 pandemic, which served as a catalyst for accelerating digital transformation across various sectors.

3. RESULTS AND DISCUSSION

The study findings indicate that the use of digital technology in corporate CSR programs in Indonesia and globally can be categorized into four main clusters: (1) communication and stakeholder engagement technologies, (2) data collection and analysis technologies, (3) program implementation technologies, and (4) reporting and accountability technologies (Aqila & Sisdianto, 2025). These four clusters interact with one another and form an integrated digital CSR ecosystem. A survey conducted by Deloitte (2022) of 500 senior executives in the Asia-Pacific region found that 78% of companies have used at least one digital platform to support their CSR programs, a sharp increase from 34% in 2018.

Within the communications technology sector, social media has become the most dominant tool. Platforms such as Instagram, YouTube, TikTok, LinkedIn, and X (Twitter) are used extensively to communicate CSR initiatives to the public. A study by Etter et al., (2019) which analyzed over 50,000 CSR-related social media posts from 100 Fortune 500 companies, found that CSR content presented visually and interactively on digital platforms generated an average engagement rate 3.2 times higher than that of press releases or conventional CSR reports. In Indonesia, Unilever Indonesia recorded a 23% increase in brand awareness after integrating its environmental CSR campaign with short-form video content on digital platforms (Unilever Indonesia, 2023).

The Role of Big Data and Artificial Intelligence in Enhancing the Effectiveness of CSR

One of the most significant transformations brought about by digitalization is companies' ability to make data-driven decisions when designing and implementing CSR programs (Feryansah & Sisdianto, 2024). Big data enables companies to conduct in-depth analyses of community needs, identify the most vulnerable beneficiary groups, and predict the potential impacts of various program alternatives before decisions are made (Maharani, 2025). This represents a paradigm shift from a top-down, one-way CSR approach toward a more inclusive, responsive, and impact-oriented approach.

PT Telkom Indonesia is a leading example of the use of big data to optimize CSR programs in Indonesia. Through its internally developed Digital CSR Management System platform, Telkom integrates data from various sources—including demographic data, microeconomic data, and digital access data—to identify regions with the highest levels of the digital divide. As a result, Telkom's Digital Society program successfully reached over 2,400 villages across Indonesia during the 2020–2023 period, with budget allocation efficiency increasing by 31% compared to the period before the adoption of the data-driven system (Telkom Indonesia, 2023). Artificial intelligence (AI) is also beginning to be used for sentiment analysis regarding public responses to CSR programs, enabling companies to make real-time adjustments to communication strategies and program implementation.

PT PLN (Persero) uses an AI- and IoT-based monitoring system to track carbon emissions from power plant operations in real time, with the data subsequently integrated into the company's environmental CSR program. This system is capable of detecting emission anomalies and issuing early warnings, enabling corrective actions to be taken more quickly. According to PLN's 2022 sustainability report, the implementation of this system contributed to an 8.7% reduction in CO₂ emissions during the first two years of implementation, exceeding the initial target of 5%..

Blockchain as an Innovation in Transparency for CSR

Blockchain technology offers an innovative solution to one of the greatest challenges in CSR implementation: transparency and accountability in the use of funds (Arwani & Priyadi, 2024). Blockchain is a decentralized ledger system in which every transaction is permanently recorded, immutable, and verifiable by all stakeholders without the need for intermediaries (Agusnur, 2025). In the context of CSR, this means that donations, the distribution of benefits, and all fund movements can be transparently tracked by the public, implementing partners, regulators, and beneficiaries.

Several global companies have pioneered the adoption of blockchain for CSR. IBM Food Trust uses blockchain to ensure transparency in the food supply chain, which contributes to CSR programs aimed at empowering smallholder farmers in developing countries. Walmart China utilizes similar technology to ensure food safety and traceability, which indirectly supports the well-being of its partner farmers. In Indonesia, pilot projects using blockchain for CSR program transparency began to be tested by several state-owned enterprises in 2022–2023, although widespread adoption still faces obstacles in the form of limited digital infrastructure, human resource capacity, and regulations that do not yet fully accommodate this technology (Feryansah & Sisdianto, 2024)

Digital Platforms and Community Empowerment

Digital technology is not only changing the way companies manage their CSR programs internally, but is also transforming the relationship between companies and the communities they serve (Tresnadi & Mangkuto, 2025). Mobile apps and web platforms have enabled the creation of more participatory CSR models, in which communities are no longer merely recipients of aid, but active participants who help determine the agenda, priorities, and form of assistance needed (Porter & Kramer, 2018). This shift reflects the evolution of the CSR concept from mere philanthropy toward shared value creation.

Through platforms like Kitabisa.com in Indonesia, companies can integrate their CSR programs with public fundraising initiatives, thereby multiplying the resulting social impact. Bank Rakyat Indonesia (BRI), through its “BRIGuna Peduli” program, leverages digital platforms to directly connect the company’s CSR programs with community needs, successfully distributing aid to over 150,000 beneficiaries in 2022 at operational costs 40% lower than those of conventional distribution mechanisms (BRI, 2022). This model demonstrates how technology can simultaneously enhance both the efficiency and effectiveness of CSR programs.

Challenges and Obstacles in Implementing Digital CSR

Behind the various opportunities it offers, the digitalization of CSR also presents significant challenges. First, the digital divide between urban and rural areas in Indonesia remains substantial (Alwyah, 2025; Kunnati et al., 2025). Data from the Central Statistics Agency (2023) shows that internet penetration in rural areas remains at 54%, far below the 82% rate in urban areas. This situation risks digital CSR programs failing to reach the groups most in need namely, poor and remote communities, which have historically been the primary targets of CSR programs (Hooghiemstra, 2000).

Second, data security and privacy issues are a serious concern in the digitalization of CSR. When companies collect and process data from beneficiary communities for CSR program analytics, there is a risk of data misuse that could potentially harm those communities. Data protection regulations in Indonesia have only recently begun to be strengthened with the enactment of the Personal Data Protection Act in 2022, but its implementation still requires time and adequate oversight capacity. Third, limited human resource capacity in managing advanced technology poses a real obstacle, particularly for small and medium-sized enterprises (SMEs) seeking to adopt a digital CSR approach but facing resource constraints (Morsing & Schultz, 2006)

Fourth, there is a risk of digital greenwashing, which involves using digital platforms solely to polish a company's image without any substantive CSR programs. The ease of creating and disseminating digital content can encourage companies to prioritize impression management over actual impact. Research by Prihanum & Fadillah, (2024) found that increased CSR communication activity on social media does not always correlate positively with improvements in a company's actual CSR performance. This necessitates independent verification and audit standards for CSR claims published digitally.

Conceptual Framework for Digital CSR in the Indonesian Context

Based on a synthesis of findings from a literature review and an analysis of corporate CSR reports, this study formulates a conceptual framework for Digital CSR consisting of four interconnected dimensions. The first dimension is Digital Infrastructure, which encompasses the availability of platforms, connectivity, and technological capacity that form the foundation for implementing digital CSR. The second dimension is Governance and Regulation, which includes internal company policies, ESG (Environmental, Social, Governance) reporting standards, and government regulations governing the implementation of CSR and the use of data. The third dimension is Capacity and Ecosystem, which refers to human resource capabilities, strategic partnerships, and the social innovation ecosystem that supports digital CSR programs. The fourth dimension is Impact and Accountability, which encompasses mechanisms for measuring, reporting, and verifying the resulting social impact.

This framework emphasizes that the success of digital CSR is not determined by technological sophistication alone, but rather by the alignment of these four dimensions. Companies with advanced digital infrastructure but weak governance risk falling into the trap of digital greenwashing (Nusuki, 2025). Conversely, companies with strong governance but limited infrastructure can optimize the use of existing technology more effectively and efficiently. For companies in Indonesia, particularly those operating in areas with limited digital infrastructure, a hybrid approach that combines digital and non-digital methods appears to be the most realistic and inclusive strategy in the medium term.

4. CONCLUSION

This study concludes that digital technology has fundamentally transformed—and will continue to transform—the landscape of CSR implementation. This transformation is unfolding along four main pathways: (1) more effective stakeholder communication and engagement through social media and digital platforms; (2) more accurate data-driven decision-making thanks to big data and AI; (3) increased transparency and accountability through blockchain; and (4) more participatory community empowerment through collaborative apps and platforms. Companies that successfully integrate these four transformation pathways into their CSR strategies have been shown to generate more significant, measurable, and sustainable social impact.

The digitization of CSR is not a magic solution free of challenges. The digital divide, data privacy issues, the risk of digital greenwashing, and limitations in human resource capacity are real challenges that must be proactively anticipated and mitigated. This study recommends three strategic steps for Indonesian companies in adopting digital CSR: first, building internal capacity in digital literacy and data management through ongoing training programs; second, developing strategic partnerships with the government, academic institutions, and civil society organizations to bridge the digital divide; and third, adopting international ESG reporting standards such as the GRI Standards and UN SDGs as a framework for the accountability of digital CSR programs. In this way, CSR in the digital age can truly become a catalyst for inclusive and sustainable social development in Indonesia.

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