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DOI: [10.22219/jrak.v15i4.42295](https://doi.org/10.22219/jrak.v15i4.42295)

Citation:
Saraswati, E., Wardhani, D. A., Agustin, M. F. (2025). Do Digital Technology and CSR Disclosure Quantity and Quality Affect Firm Value? Jurnal Reviu Akuntansi Dan Keuangan, 15(4), 828-846.

Article Process Submitted:
September 22, 2025

Reviewed:
September 30, 2025

Revised:
Oktober 19, 2025

Accepted:
November 6, 2025

Published:
November 6, 2025

Office:
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Jalan Raya Tlogomas 246,
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P-ISSN: 2615-2223
E-ISSN: 2088-0685

Article Type: Research Paper

Do Digital Technology and CSR Disclosure Quantity and Quality Affect Firm Value?

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ABSTRACT

Purpose: This study aims to examine the impact of digital technology and corporate social responsibility (CSR) disclosure quantity and quality on firm value, as well as to test the role of financial flexibility and firm size as moderating variables in the context of the Indonesian banking industry.

Methodology/approach: This study uses a sample of 276 banking companies listed on the Indonesia Stock Exchange during the 2019–2024 period, selected using purposive sampling. Data analysis was conducted using Moderated Regression Analysis (MRA).

Findings: The research findings indicate that the disclosure of digital technology and both quantity and quality of CSR disclosure can enhance firm value, but this effect weakens when interacted with financial flexibility. Larger firm size strengthens the influence of both the quantity and quality of CSR disclosures, but not digital technology disclosure. These findings confirm that non-financial information, including both the quantity and quality of CSR disclosures and digital technology, has an impact on firm value.

Practical implications: This study provides practical implications for banking management to prioritize verifiable CSR disclosures and the utilization of digital technology, as well as to ensure adequate financial support.

Originality/value: This study contributes by integrating digital technology disclosure, quantity and quality of CSR, and firm size to support signaling theory.

Keywords: Digital Technology Disclosure; Corporate Social Responsibility Disclosure Quantity and Quality; Financial Flexibility; Firm Size; Firm Value



ABSTRAK

Tujuan penelitian: Penelitian ini ditujukan untuk menguji pengaruh pengungkapan teknologi digital dan kuantitas serta kualitas pengungkapan *Corporate Social Responsibility* (CSR) pada nilai perusahaan. Penelitian ini juga menguji peran fleksibilitas keuangan dan ukuran perusahaan sebagai variabel moderasi pada konteks industri perbankan Indonesia.

Metode/pendekatan: Penelitian ini menggunakan sampel sebanyak 276 perbankan yang terdaftar pada Bursa Efek Indonesia (BEI) periode 2019–2024. Sampel diambil dengan teknik *purposive sampling*. Data dianalisis dengan menggunakan *Moderated Regression Analysis* (MRA).

Hasil: Temuan pada penelitian ini menunjukkan bahwa pengungkapan teknologi digital dan pengungkapan kualitas serta kuantitas CSR dapat meningkatkan nilai perusahaan. Pengaruh ini melemah saat diinteraksikan dengan fleksibilitas keuangan namun tidak dengan pengungkapan teknologi. Temuan ini mengkonfirmasi bahwa informasi non-keuangan, termasuk kualitas dan kuantitas pengungkapan CSR serta teknologi digital, memiliki dampak pada nilai perusahaan.

Implikasi praktik: Penelitian ini memberikan implikasi praktik untuk manajemen perbankan melalui pemrioritasan pengungkapan CSR yang dapat diverifikasi dan juga pemanfaatan teknologi digital dengan tetap memperhatikan dukungan keuangan yang memadai.

Orisinalitas/kebaharuan: Penelitian ini berkontribusi melalui pengintegrasian pengungkapan teknologi digital, kuantitas dan kualitas CSR, serta ukuran perusahaan untuk mendukung teori Sinyal.

Kata kunci: Fleksibilitas Keuangan; Kuantitas dan Kualitas Pengungkapan CSR; Nilai Perusahaan; Pengungkapan Teknologi Digital; Ukuran Perusahaan.

INTRODUCTION

Firm value is a key indicator observed by investors, as it reflects the level of confidence in an entity's performance and prospects (Hamad & Cek, 2023). Data from Financial Services Authority ("OJK") (2023) shows a decline in firm value within the banking sector, driven by an increase in Non-Performing Loans (NPLs) during the Covid-19 pandemic, reaching 10.43% due to many debtors struggling to meet their credit obligations. This condition eroded investor confidence in banking performance and heightened the potential for information asymmetry between companies and external stakeholders (Chun & Ardaaragchaa, 2024). In such circumstances, management tends to control information by delaying loss

recognition or presenting financial statements more optimistically than the actual condition to maintain corporate image (Undji & Sheefeni, 2024).

The disclosure of additional information, whether mandatory or voluntary, can improve the accuracy of financial analysis estimates (Cormier et al., 2022). This not only strengthens a company's competitive advantage but also helps reduce information asymmetry between management and investors (Eliwa et al., 2024). Furthermore, intangible-based information plays a crucial role in creating competitive advantage (Feliciano-Cestero et al., 2023). Investments in research and development (R&D) and information technology, supported by effective communication strategies, have been shown to positively contribute to firm performance (Khan et al., 2023). The changing business environment reflects a shift from the industrial era—dominated by dependence on financial capital and physical assets such as machinery and labor—toward an information era that emphasizes knowledge, skills, and intellectual creativity of employees (AlMomani et al., 2023).

In 2025, the World Intellectual Property Organization (WIPO) noted a global shift in dominance from tangible to intangible assets. In the banking sector, the value of intangible assets increased by 28% in 2024 compared to 2023. Dependence on tangible assets is deemed insufficient to maintain competitive advantage due to their replicable and less innovative nature (Barak & Sharma, 2023). Conversely, intangible assets in banking, such as customer loyalty, play a strategic role in creating long-term value (Ho & Wong, 2023). Therefore, the disclosure of intangible assets becomes essential, as sustainable relationships with customers are a key factor in enhancing firm value (Alkhatib & Valeri, 2022).

These changes are increasingly relevant in the context of the Industrial Revolution 4.0, which has brought significant transformation across sectors, including banking (Dietzmann et al., 2023; E. Li et al., 2023). The emergence of advanced technologies such as cloud computing, blockchain, big data, and artificial intelligence (AI) drives digital transformation, now a critical need for improving business process efficiency and strengthening customer engagement (Chen & Chen, 2023; Franki et al., 2023; Volpentesta et al., 2023). This digital evolution goes beyond mere technology adoption—it involves full integration into business activities, fundamentally changing how companies operate and deliver value to stakeholders (Hortovanyi et al., 2023; L. Li et al., 2023; Van Veldhoven & Vanthienen, 2023).

Beyond digitalization, non-financial information disclosure also plays a vital role in building stakeholder trust, particularly through data related to environmental and social aspects. Corporate Social Responsibility (CSR) disclosure has been used as a communication tool with various stakeholders, including creditors, employees, suppliers, activist groups, government agencies, media, and the broader public (Winit et al., 2023). The positive image formed through CSR ultimately contributes to enhancing firm value (Nyantakyi et al., 2023).

Other factors that strengthen firm value include financial flexibility and firm size. Financial flexibility refers to a company's ability to seize unexpected opportunities or manage emerging risks at low cost (O'Connell et al., 2022). Good financial flexibility signals to investors that a company can withstand economic fluctuations and uncertainties, thereby reducing bankruptcy risk and enhancing sustainable growth prospects (Sukirno & Prihandini, 2023). Firms with greater financial flexibility are better equipped to face negative shocks and invest in profitable opportunities. As a result, their financial performance is believed to be more stable and superior compared to others (Naseer et al., 2024). Meanwhile, firm size reflects a company's capacity and stability. Large firms generally possess stronger resources, greater ability to manage liabilities effectively, and broader investment opportunities. A larger size is also often associated with profitability and the ability to consistently distribute dividends,

serving as a signal of financial health and reinforcing investor confidence (Amir et al., 2024; Chen et al., 2023). Firm size also affects the level of information disclosure. Smaller firms tend to have lower disclosure demands than larger firms (Winit et al., 2023). Additionally, smaller firms bear lower agency costs, requiring less extensive and less complex disclosures (Kijkasiwat et al., 2022). Furthermore, positive perceptions of firm size have been shown to strengthen investor confidence in the quality of financial statements, particularly in initial public offerings (IPOs), illustrating that both firm size and financial flexibility play a crucial role in shaping market expectations (Eshghi & Astvansh, 2023; Qi et al., 2023).

Based on this overview, the study aims to examine the role of financial flexibility and firm size in the relationship between digitalization and CSR disclosure on firm value. Signaling theory is used as the theoretical foundation to explain this relationship, providing signals to shareholders regarding firm value. Previous research has shown that both digital technology and CSR disclosure affects firm value (Alkhatib & Valeri, 2022; Nyantakyi et al., 2023). However, the measurement of CSR disclosure in that research is based on GRI index coverage. The newly proposed GRI framework, however, does not require firms to report on all indicators. Instead, it emphasizes disclosure only on aspects that are relevant and material for firm (GRI, 2021). This study builds upon materiality judgement by replacing CSR measurement with quantity and quality dimensions as proposed by Raar (2002), due to the declining relevance of the GRI index following the introduction of materiality elements.

Signaling theory posits that firms are motivated to provide information to external parties, with these parties interpreting such information as various signaling mechanisms related to firm value (Friske et al., 2023). This theory originated from Spence’s work and argues that organizations attempt to convey information to relevant parties through various channels, with the expectation that such information will prompt the recipients to take certain actions (Connelly et al., 2025). The need to convey this information underpins the use of digital technology to accelerate the dissemination of corporate information. In addition to digital technology, global economic growth and environmental sustainability issues drive firms to engage in social activities that can benefit stakeholders and the surrounding community. Both types of disclosure have the potential to enhance corporate value. The conceptual framework is depicted as follows:

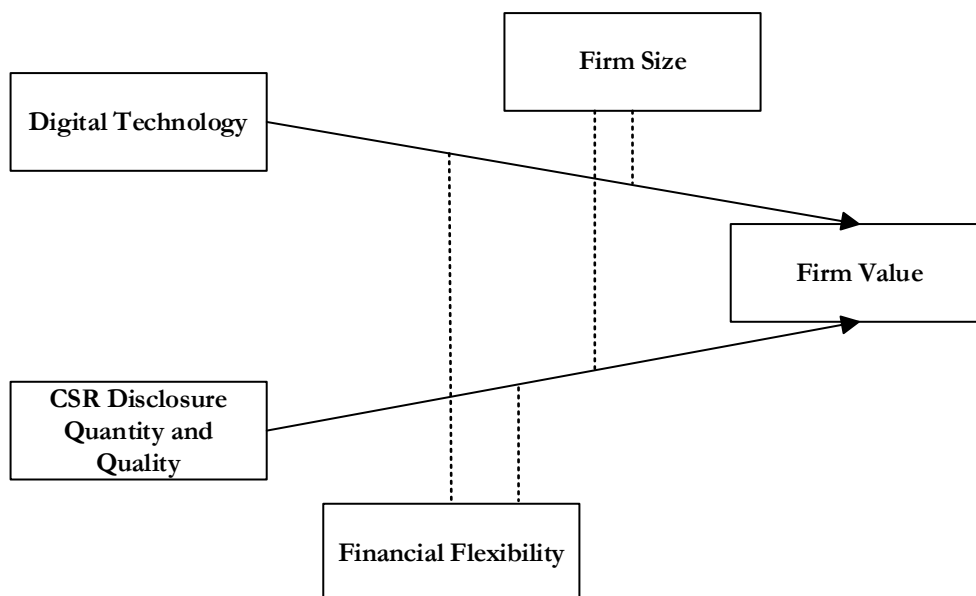


Figure 1. Research Framework

Digital technology serves as a supportive tool in the global economy, offering firms countless possibilities to enhance competitiveness. Digitalization provides mechanisms to gain access to new market opportunities and specialized informational services such as remote consultations, continuous training, and innovative consultation modes (Telukdarie et al., 2023). Firms characterized by high levels of digitalization have incentives to disclose information about the extent of digitalization within the organization, serving as a signaling mechanism to the market that can potentially elevate firm value (Zhang et al., 2025). This disclosure acts as a positive signal, indicative of a forward-looking and adaptive organizational strategy, fostering stakeholder confidence, and influencing perceptions of the firm's strategic positioning in the evolving digital landscape. This strategic disclosure aligns with the broader trend of leveraging digital technologies not only to maintain competitiveness but also to proactively shape and navigate the trajectory of business operations in the contemporary digital era.

Media disseminating information about digitalization is a crucial tool that can significantly enhance the effectiveness of the signals being conveyed. This is evidenced by the increased volume of information provided online by firms, contributing to more efficient information dissemination to stakeholders, reducing operational costs (e.g., printing or staffing costs), and enhancing the frequency and speed of distribution (Salvi et al., 2021). Nel and Baard (2022) underscores the importance of corporate websites, perceived as efficient communication media between firms and prospective investors.

The role of information released through corporate websites can mitigate information asymmetry, positively impacting corporate performance. Online information is regarded as crucial for facilitating firms in achieving strategic and financial objectives (Saraite-Sariene et al., 2020). Therefore, the hypothesis formulated is as follows:

H1: The level of digital technology disclosure has a positive effect on firm value.

Firms undertake various efforts to convince stakeholders, including prospective investors, that management has strategically communicated corporate social responsibility performance. The objective of the CSR disclosure process is to legitimize corporate behavior, signifying that stakeholders perceive the firm's actions positively (Koh et al., 2023). The CSR disclosure is depicted with positive corporate values for stakeholders (Saraite-Sariene et al., 2020). Therefore, CSR disclosure is considered fundamental for building the firm's relationships with stakeholders (Koh et al., 2023). CSR disclosure has a positive impact on corporate value (Farooq et al., 2025). Signaling theory suggests that, to signal stakeholders about a firm's engagement in sustainable development, management seeks to convey social responsibility through various communication channels such as websites. The hypothesis formulated is as follows:

H2a: The CSR disclosure quantity has a positive effect on firm value.

H2b: The CSR disclosure quality has a positive effect on firm value.

Financial flexibility refers to a firm's ability to access and manage its financial resources to meet investment needs. When a firm possesses a high level of financial flexibility, such as having sufficient cash reserves, an optimal debt level, or access to additional funding sources, the firm is more inclined to engage in investments. Firms with good financial flexibility are in a better position to pursue growth opportunities and undertake long-term investments, as they have the necessary resources to support such decisions (Mahmood, 2022).

Firms with a high level of leverage ratio (depicting financial flexibility) tend to be more active in disclosing digital technology-related information, such as investments in digital technology

research and development ([Broby, 2021](#)). Firms with significant debt levels often require access to additional funding sources, such as equity financing, and increasing the disclosure of digital technology information can enhance trust ([Dang et al., 2020](#)). The hypothesis is formulated as follows:

H3: Financial flexibility strengthens the relationship of digital technology disclosure to firm value.

Firm size signifies the scale of the industry. Large-scale industries attract attention from various stakeholders, leading firms to incur additional costs for digital technology disclosure. ([Salvi et al., 2021](#)) reveal that the level of digital technology implementation in large-scale industries provides positive image benefits to stakeholders, while small and medium enterprises (SMEs) consider engagement in CSR as sunk costs without significant additional benefits. [Ting \(2021\)](#) assert that CSR disclosure is significantly related to firm size. Firm size is one of the factors that can influence firm value, as larger-sized or scaled firms find it easier to secure funding sources crucial for operational purposes. The hypothesis is formulated as follows:

H4: Firm size strengthens the relationship of digital technology disclosure to firm value.

Firms with a high leverage ratio (financial flexibility) tend to have higher levels of CSR disclosure as verified by other studies, including [Chen and Chen \(2023\)](#), which explain why a high leverage ratio can enhance CSR disclosure. Companies with a high level of financial flexibility have an obligation to make broader disclosures than companies with low flexibility. According to Signaling theory, companies undertake CSR initiatives to communicate credible information about their underlying quality to stakeholders, thereby reducing information asymmetry in the market ([Uyar et al., 2022](#)). Firms with strong financial flexibility that disclose their CSR activities signal not only their commitment to social responsibility but also their financial soundness, demonstrating their capacity to sustain such initiatives ([Riahi et al., 2024](#)).

Having adequate financial slack enables firms to invest in CSR programs, which serves as a signal of stability and long-term resilience. [Uyar et al. \(2022\)](#) note that firms with higher cash reserves are more likely to engage in CSR, reinforcing positive investor perceptions of their financial strength. This engagement functions as a dual signal—of social accountability and financial robustness—ultimately enhancing firm value ([Riahi et al., 2024](#)). Furthermore, CSR initiatives act as a strategic tool for reputation management. Companies that transparently disclose their CSR practices tend to be viewed more favorably by investors and consumers alike, improving corporate reputation and, consequently, firm value ([Koh et al., 2023](#); [Tran & Tran, 2022](#)). Through CSR engagement, firms can distinguish themselves from competitors and build a socially responsible image that aligns with modern investment preferences emphasizing sustainability and ethics ([Carrasco & Ferrón-Vilchez, 2022](#); [R. Xu et al., 2023](#)). The hypothesis is formulated as follows:

H5a: Financial flexibility strengthens the relationship of CSR disclosure quantity to firm value.

H5b: Financial flexibility strengthens the relationship of CSR disclosure quality to firm value.

Large firms' size may indicate a high level of commitment to continuous growth, leading the market to be more willing to pay a premium for its shares, as there is confidence in achieving expected returns. Signaling theory explains that companies use CSR disclosure as a medium

to convey credible information about their performance and ethical standards to stakeholders, thereby improving their reputation, competitive advantage, and perceived market value. Larger firms, given their greater visibility and access to resources, are more capable of implementing extensive CSR initiatives and providing detailed disclosures. Research supports this notion, indicating that firm size significantly affects the extent of CSR reporting. [Agarwala et al. \(2023\)](#) found that firm size influences CSR participation, with medium-sized firms demonstrating the most comprehensive reporting compared to smaller and larger firms, highlighting the crucial role of organizational scale in shaping how CSR affects firm value. Similarly, the scope and depth of CSR disclosure are closely linked to stakeholder engagement, which tends to be stronger in larger organizations, thereby sending a more convincing positive signal to the market ([Koh et al., 2023](#)).

Within the framework of signaling theory, companies that achieve strong CSR performance are motivated to disclose more information to reduce information asymmetry and strengthen stakeholder confidence. [Koh et al. \(2023\)](#) emphasize that better CSR performance typically leads to more extensive disclosure, which investors and other stakeholders interpret as an indicator of reliability and transparency. Since larger firms generally possess more substantial resources and have a greater need to maintain a positive corporate image, their CSR reporting serves as a stronger signal of commitment to sustainable and ethical practices, ultimately contributing to higher firm value. Furthermore, effective CSR communication can reduce perceived risks and enhance investor trust. [Villiers et al. \(2022\)](#) provide evidence of a positive relationship between CSR disclosure and firm value, demonstrating that transparent CSR reporting can mediate firm risk and improve analyst evaluations. Consequently, large firms that engage in comprehensive CSR disclosures tend to achieve higher market valuations, underscoring the economic significance of CSR as both a strategic and reputational asset. The hypothesis is formulated as follows:

H6a: Firm size strengthens the relationship of CSR disclosure quantity to firm value.

H6b: Firm size strengthens the relationship of CSR disclosure quality to firm value.

METHODS

This study employs the quantitative content analysis method within the banking sector listed on the Indonesia Stock Exchange (Bursa Efek Indonesia) spanning the years 2019 to 2024. The sampling method used was purposive sampling using 2 criteria: 1) published and accessible sustainability report; and 2) did not categorized in IDX custom monitoring list. By those criteria, the number of samples obtained was 276 firm-years. This number is adequate as [Hair et al. \(2019\)](#) standard for minimum sample is 100 in multivariate analysis.

In this study, the framework for digital technology disclosure is adapted based on international accounting standards, specifically the International Financial Reporting Standards (IFRS). The adaptation of the reporting framework according to IFRS is chosen because reports must be interrelated, not only with company information but also with external data, including market data, reports on industry/national/global company information, competitors, and legal frameworks.

Disclosure Items	Criteria or Key Characteristics
Fixed Assets	Use of advanced technology and digital transformation; digital digital; digital technology; control by artificial intelligence;

Disclosure Items	Criteria or Key Characteristics
835	supporting and enhancing environmental technology; remote control.
Unrecognised Intangible Assets (Under IFRS)	Composition of goodwill, including the part related to digital technology, artificial intelligence, reputation for being an environmentally friendly company, workers engaged in intellectual assignments related to digital technology, number of professional employees with digital technology knowledge; part of the firm's strategy that focuses on the application of new technologies.
Recognised Intangible Assets (Under IFRS)	Application of digital and other advanced technologies.
Financial Instruments	Forecast of the development of financial markets including: the sphere of interests of the company, the use of digital technologies for transactions with financial instruments.
Estimated Liability	Detailed description of related risks (risk areas, measures to reduce these risks, including risks related to digital transformation).

Table 1.
Digital
Technology
Disclosure
Framework

Source: [Efimova and Rozhnova \(2019\)](#)

The Framework for CSR disclosure is based on research conducted by ([Raar, 2002](#)). This choice is made because the framework in that study provides an overview of both quantitative and qualitative aspects in the firm's CSR disclosure ([Raar, 2002](#)). The examination of the impact of CSR on firm value is conducted by integrating the quantitative and qualitative values of CSR disclosure.

Disclosure Items	Criteria or Key Characteristics
Key Indicator	<ul style="list-style-type: none"> • Description of the issues and the environmental and social impacts associated with the products and/or operational services. • Anticipated environmental performance indicators. • Inputs and emissions related to energy, material waste, water, solid waste, hazardous waste, fuel, air eco-efficiency

Disclosure Items	Criteria or Key Characteristics
	benchmarks (company, division, or related products).
Profile	<ul style="list-style-type: none"> • Life cycle impacts - product or service. Environmental issues including: <ul style="list-style-type: none"> • Reorganisation structure • Type of products marketed • Industry group
Policy	Mission statement, values, environmental management system (e.g. ISO 14000), external certification, performance measurement standards, risk assessment criteria, audits, training.
External Relation	Stakeholder requirements, stakeholder communication, benchmarking, consultation and information issues.
Management Performance	<ul style="list-style-type: none"> • Relating to compliance: including penalties and rewards, compliance with international declarations, treaties, national, local. • Remediation costs, environmental liabilities, oil spills, accidents, emissions. • Performance against internal standards, awards, recognition, etc.
Occupational Health and Safety	Any comments relating to occupational health and safety matters, including plans, goals, objectives and performance.
Product Performance	Related to life cycle impacts, product stewardship initiatives and performance, indicators relating to the company's product/service performance.
Sustainability	Integration of economic and social objectives and values, linkage to long-term decision-making and performance issues.

Table 2.
Corporate
Social
Responsibility
(CSR)
Disclosure
Framework

Source: [Raar \(2002\)](#)

Quantity of Disclosure “How Many”	Quality of Disclosure “How Much”	Qualitative Definition
1 = sentence	1 = monetary	Disclosure of terms in
2 = paragraph		monetary/currency terms

Quantity of Disclosure “How Many”	Quality of Disclosure “How Much”	Qualitative Definition
3 = 1/2 article page 4 = 1 article page 5 ≥ 1 article page	2 = non-monetary	Quantified in numerical form, weight, volume, size etc. but not financial/currency
	3 = qualitative	Descriptive explanation only
	4 = qualitative and monetary	Descriptive explanation and monetary
	5 = qualitative and non-monetary	Descriptive explanation and numeric
	6 = monetary and non-monetary	A combination of currency and numeric
	7 = qualitative, monetary and non-monetary	Descriptive, financial and numerical explanations

Table 3. Quantitative and Qualitative Definition

Source: Raar (2002)

This research employs multiple regression analysis to test the proposed hypotheses. Specifically, the moderating hypotheses are examined using Moderated Regression Analysis (MRA), which involves two regression models. The first model includes the moderator variable as an independent variable, while the second model introduces an interaction term between the independent variable and the moderator. The study adopts a one-tailed hypothesis testing approach; therefore, the significance value (p-value) is divided by two. In addition, the direction of the relationship is evaluated to determine whether it aligns with or contradicts the hypothesized direction. Regression model for this research is as follows:

$$Firm\ value = \alpha + \beta_1 * Dig + \beta_2 * CSRQuan + \beta_3 * CSRQual + \beta_4 * Flex + \beta_5 * FSize + \epsilon$$

$$Firm\ value = \alpha + \beta_1 * Dig + \beta_2 * CSRQuan + \beta_3 * CSRQual + \beta_4 * Flex + \beta_5 * FSize + \beta_6 * Dig * FSize + \beta_7 * CSRQuan * FSize + \beta_8 * CSRQual * FSize + \beta_9 * Dig * Flex + \beta_{10} * CSRQuan * Flex + \beta_{11} * CSRQual * Flex + \epsilon$$

RESULTS AND DISCUSSIONS

Variable	N	Min	Max	Average	Std. Dev.
X1_Digital Technology Disclosure	276	2.00	4.00	3.05	0.83
X2.1_Quantity of CSR Disclosure	276	18.00	78.00	24.03	2.42
X2.2_Quality CSR Disclosure	276	17.00	70.00	27.74	3.83
M1_Financial Flexibility	276	0.02	0.84	0.72	0.22
M2_Firm Size	276	6.52	21.27	12.80	5.11
Y_Firm Value	276	0.15	8.71	2.66	6.22

Table 4. Descriptive Statistics

The results of descriptive statistics and hypothesis testing are presented in each section (marked by bold font).

Descriptive Statistics

The descriptive statistical results of the variables studied are presented in Table 4. Based on the results of descriptive statistical testing, all variables show normal data with standard deviations < 2 , except for Firm Value and firm size. On average, digital technology disclosure is slightly higher than median value (med=2.00), indicating room for improvements. On the other hand, quantity and quality of CSR disclosure is still far from its maximum value. Bank finances in this research sample are stable, indicated by average value is closer to maximum than minimum. There are heterogeneity in bank size and value, as indicated by high standard deviation.

Quantity and Quality of CSR Disclosure T-Test

A T-test was conducted to examine the differences in disclosure between quantity and quality of corporate social responsibility (CSR), presented in Table 5. Based on a one-sample test, it was found that quantity of CSR disclosures was significantly more prevalent (sig. 0.000) on company websites compared to quality of disclosures. The most frequently disclosed CSR information on websites relates to employee training and development, followed by details on employee participation and involvement in business operations. Most companies do not set social performance goals in monetary terms, either in their policies or business profiles, resulting in limited detailed disclosure on the realization of CSR plans for stakeholder interests.

Variabel	<i>t</i>	<i>df</i>	<i>Sig.</i> (2-tailed)	<i>Mean Difference</i>	<i>95% Confidence Interval of the Difference</i>	
					<i>Lower</i>	<i>Upper</i>
Quantity of CSR	124.395	276	0.000**	0.610	0.600	0.619
Quality of CSR	160.869	276	0.000**	0.576	0.568	0.583

Table 5.
CSR Disclosure T-Test

**Coefficient is significant at $p < 0.05$

Hypothesis Testing

The Multiple regression analysis test in Table 6 shows the following results.

	Variable(s)	Coefficient	Sig.	Decision
1	Constant	5.454	0.000	
	X ₁ _Digital Technology Disclosure	0,872	0,047**	H ₁ Accepted
	X _{2.1} _Quantity of CSR Disclosure	0,603	0,013***	H _{2a} Accepted
	X _{2.2} _Quality of CSR Disclosure	1,772	0,028**	H _{2b} Accepted
2	Constant	0.298	0.025	
	X ₁ _Digital Technology Disclosure	2.659	0.000**	
	X ₂ _CSR Disclosure	-0.006	0.014**	
	X ₁ _M ₁ _Financial Flexibility moderates Digital Technology Disclosure	-0.106	0.125	H ₃ Rejected
	X ₁ _M ₂ _Firm size moderates Digital Technology Disclosure	-1,157	0,048	H ₄ Rejected
	X _{2.1} _M ₁ _Financial Flexibility moderates Quantity of CSR Disclosure	-1,417	0,028	H _{5a} Rejected
	X _{2.2} _M ₁ _Financial Flexibility moderates Quality of CSR Disclosure	-0.106	0.125	H _{5b} Rejected
	X _{2.1} _M ₂ _Firm size moderates	1.201	0.003***	H _{6a} Accepted

	Quantity of CSR Disclosure			H _{6b} Accepted
X2.2_M2_	Firm size moderates	0.018	0.044**	
	Quality of CSR Disclosure			
R ²		0.307	0.414	
F-test		0.000**	0.000**	
<i>Significance level: (***) 1%; (***) 5%; and (*)10%</i>				

Table 6.
Multiple
Regression
Analysis

Discussions

The results of hypothesis testing show that digital technology disclosure on company websites significantly enhances firm value. This indicates that the broader the scope of digital information disclosed, the more positive investors’ perceptions are regarding the company’s prospects. These findings are consistent with [Salvi et al. \(2021\)](#), [Barth et al. \(2017\)](#), [Chung et al. \(2015\)](#), and [Lee and Yeo \(2016\)](#).

Digital technology disclosure serves as a strong signal to investors, thereby increasing firm value ([Salvi et al., 2021](#)) and reducing the cost of equity ([Plumlee et al., 2015](#)). High-quality and transparent digital technology disclosure improves decision-making quality, particularly in forecasting cash flow liquidity ([Barth et al., 2017](#)). [Chung et al. \(2015\)](#) found that voluntary disclosure helps reduce agency conflict between managers and shareholders. Disclosure of intangible assets can also reduce information asymmetry, especially in firms with high external financing needs ([Lee & Yeo, 2016](#)).

Voluntary information provided on company websites in the digital era affects expected cash flows, as investors anticipate higher returns from digitally adaptive firms ([Salvi et al., 2021](#)). Investor perception is shaped by a company’s ability to adapt to digitalization, understand customer needs, enhance corporate image, and improve response time and service quality. Moreover, digital capabilities reflected through website technology—such as e-commerce—can reduce costs and risks by optimizing resources, implementing innovative business models, and shifting from traditional methods to tech-driven operations.

Digital technology information influences future cash flows and capital costs, both of which are key determinants of firm value ([Salvi et al., 2021](#)). Firms that disclose more information essentially signal strong performance. Therefore, digital technology disclosure on websites can boost stakeholder confidence in company performance, enhancing reputation and firm value in the public eye when viewed from Signaling theory lenses. However, this effect does not contingent on firms’ financial flexibility. The assertion that financial flexibility does not moderate the relationship between digital technology disclosure and firm value can be explained by examining recent research on digital innovation and its direct effects on corporate performance. Contemporary evidence suggests that digital technology innovation independently enhances firm value by improving productivity, operational efficiency, and market profitability ([Ran et al., 2024](#)). [Ran et al. \(2024\)](#) demonstrate that companies actively pursuing digital transformation not only experience an increase in market valuation but also strengthen their long-term competitiveness in the evolving business environment. Similarly, [Zhou and Chang \(2023\)](#) emphasize that while digital innovation can reduce operational costs and enhance efficiency, the relationship between digitalization and firm performance varies depending on implementation intensity and organizational context. These findings collectively imply that the benefits derived from adoption of digital technology exert a dominant, direct impact on firm value, thereby minimizing or even negating the moderating role of financial flexibility within this relationship.

CSR disclosure quantity and quality significantly enhance firm value. This finding aligns with [Plumlee et al. \(2015\)](#) and supports signaling theory, which emphasizes the importance of

information as a communication tool between management and investors. The intensity of CSR activity disclosure sends positive signals about a company's commitment to social and environmental sustainability. In recent years, digitalization has heightened stakeholder awareness of CSR, particularly in developing countries ([Saraite-Sariene et al., 2020](#)). Thus, CSR disclosure contributes to firm value. This also suggests a reduced risk of greenwashing—where companies emphasize sustainability rhetoric without real implementation—leading to muted market responses to CSR disclosures ([Monika Devi et al., 2024](#); [Yoo et al., 2024](#)).

Financial flexibility and firm size do not support the findings of [Dang et al. \(2020\)](#) and [Broby \(2021\)](#), who argued that financial flexibility strengthens the relationship between digital technology disclosure and firm value. Financial publications can signal a company's true condition to external parties. Firms manage their financial strength through financial slack—excess funds—which reflects sufficient financial capacity. This study reveals that financial flexibility is unable to strengthen the influence of quantity of CSR disclosure on firm value. This may occur because firms with high financial flexibility tend to prioritize the allocation of funds for productive investments that generate short-term returns rather than for CSR activities. Moreover, although CSR is disclosed in quantitative form, investors continue to regard direct financial information as the primary reference in decision-making, thereby limiting the extent to which additional CSR disclosures can enhance firm value ([Hamad & Cek, 2023](#)).

Firm size also fails to support the findings of [Salehi et al. \(2019\)](#) who suggested that company scale enhances the impact of digital technology disclosure on firm value. This result indicates that digital technology adoption and disclosure are not solely dependent on firm size but are more influenced by strategic direction and managerial commitment. Conversely, this study finds that firm size plays a significant role in strengthening the impact of both quantity and quality of CSR disclosures on firm value. Large firms possess more resources to carry out sustainable social and environmental activities, making their CSR disclosures more legitimate in the eyes of stakeholders.

The results about financial flexibility do not moderate the relationship between digital technology disclosure and firm value, within the framework of signaling theory, can be explained through how firms utilize digital transformation and disclosure to convey credibility. Signaling theory suggests that firms communicate their quality and prospects through specific disclosures that influence investor perception and firm valuation ([Q. Xu et al., 2023](#); [Yang et al., 2025](#)). Recent research shows that firms adopting digital strategies enhance transparency and stakeholder communication, thereby improving information disclosure independently of financial flexibility ([Li, 2025](#)). In addition, [Zhang et al. \(2025\)](#) found that firms with limited financial flexibility may compensate through more persuasive disclosure tones during digital transformation, implying that the effectiveness of signals lies in the communication improvements driven by technology rather than financial capacity.

Supporting evidence from [Chen and Srinivasan \(2023\)](#) demonstrates that digital transformation directly strengthens firm performance indicators such as return on assets and sales growth, ultimately increasing firm value regardless of financial flexibility. Similarly, studies by [Liu et al. \(2024\)](#) reveal that better internal controls and transparency through digital reporting improve market liquidity and valuation, while [Su et al. \(2023\)](#) highlight that digital disclosures enhance ESG performance and corporate reputation. Collectively, these findings confirm that digital transformation and disclosure serve as powerful signals of quality and innovation that positively influence firm value, independent of a firm's financial flexibility.

CONCLUSIONS

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This study examines the role of digital technology and the quantity and quality disclosure of Corporate Social Responsibility (CSR) in banking companies in Indonesia. The findings reveal that both digital technology disclosure and CSR disclosure—presented in quantitative and qualitative forms—contribute to enhancing firm value. These results suggest that the market is more responsive to measurable and verifiable information, thereby avoiding symbolic behavior or greenwashing.

From a moderation perspective, financial flexibility does not strengthen the relationship between digital technology or quantity of CSR disclosure and firm value. However, it does play a role in enhancing the credibility of qualitative CSR disclosure. This implies that CSR narratives are considered relevant by the market when supported by sufficient financial capacity to realize the disclosed social and environmental programs. Financial flexibility and firm size do not reinforce the relationship between digital technology and firm value, indicating that digital technology disclosure alone is sufficient to improve firm value. Furthermore, firm size is proven to strengthen the influence of both quantity and quality of CSR disclosure on firm value. Larger firms possess more adequate resources to carry out sustainable social and environmental activities, thereby gaining stronger legitimacy in the eyes of stakeholders.

These findings can have several implications. It suggests that transparency in digital transformation initiatives and CSR activities can serve as powerful strategic tools to strengthen investor trust and market valuation. Indonesian banks are encouraged to enhance the clarity, accessibility, and credibility of their digital disclosure practices, highlighting tangible progress in fintech adoption, cybersecurity, and customer digital engagement. Such disclosures not only serve as signals of innovation and efficiency but also demonstrate banks' responsiveness to technological shifts and sustainability expectations, key factors driving investor decisions in an increasingly digitalized financial market.

Furthermore, the non-significant moderating effects of financial flexibility and firm size imply that the benefits of digital and CSR disclosures are not confined to large or financially robust banks alone. Smaller or less financially flexible banks can still enhance firm value through transparent and high-quality reporting practices. Regulators such as OJK (Otoritas Jasa Keuangan) could encourage standardized frameworks for digital disclosure reporting across banking institutions to ensure comparability and accountability. By emphasizing the substance of disclosure rather than firm size or financial strength, the Indonesian banking sector can foster a more level playing field, promoting sustainable growth, investor confidence, and long-term financial stability.

The results of this study reveal that the disclosure of digital technology and CSR enhances firm value. Information contained on the firm's website can provide stakeholders with insights demonstrating that management has optimized resources and implemented an innovative business model, improving efficiency, quality, and consistency in business processes, thereby establishing a favorable reputation in the eyes of investors and prospective investors. Furthermore, these findings indicate that Indonesian banking firms have recognized that improving social and environmental performance supports economic performance, as evidenced by the increase in firm value. In this context, social responsibility activities are considered a beneficial asset for the company. This study also indicates that the disclosure of digital technology and CSR aligns with the principles of signaling theory, as this information can signal the firm's condition to investors and influence firm value. The

limitation of the study, that used content analysis, which contains researcher subjectivity. Future research is suggestion to use staff researchers to reduce subjectivity.

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