



Analysis of Environmental, Social, and Governance Disclosure Quality in Indonesian Manufacturing Companies

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Abstract

Purpose: This study aims to analyze the quality of Environmental, Social, and Governance (ESG) disclosures among manufacturing companies listed on the Indonesia Stock Exchange (IDX) during 2021–2025 using the Global Reporting Initiative (GRI) Standards 2021 and the Indonesian Financial Services Authority (OJK) framework.

Research Methodology: A descriptive quantitative approach was employed through content analysis of sustainability and annual reports. Purposive sampling selected 85 manufacturing companies, resulting in 425 firm-year observations. ESG disclosure quality was measured using a GRI-based disclosure index, while panel data regression examined the effects of firm size, profitability, institutional ownership, leverage, and regulatory pressure.

Results: The findings indicate that ESG disclosure quality improved consistently between 2021 and 2025, with the average ESG disclosure index increasing from 35.00 to 47.28. Governance achieved the highest disclosure level, followed by social and environmental dimensions. Firm size, profitability, institutional ownership, and regulatory pressure positively and significantly influenced ESG disclosure quality, whereas leverage had a significant negative effect.

Conclusions: ESG disclosure quality among Indonesian manufacturing companies has improved over time, although considerable disparities remain across firms. Corporate characteristics and regulatory pressure are important determinants of disclosure quality.

Limitations: This study focuses only on manufacturing companies listed on the IDX and evaluates disclosures based on publicly available reports.

Contributions: The findings enrich the literature on ESG disclosure quality in emerging markets and provide practical implications for regulators, investors, and corporate managers seeking to strengthen sustainability reporting practices in Indonesia.

Keywords: *Environmental, Social, and Governance (ESG), Indonesia Stock Exchange, Manufacturing Companies, Sustainability Report, Disclosure Quality*

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1. Introduction

The discussion of sustainability-related policies and issues in the business sector has attracted increasing attention due to growing demands from stakeholders for greater corporate transparency. Environmental, Social, and Governance (ESG) represents a framework of corporate practices that reflects a company's commitment to environmental, social, and governance responsibilities. The

environmental dimension includes energy consumption, waste management, and pollution control; the social dimension encompasses relationships with employees, communities, and suppliers; while the governance dimension focuses on sound and sustainable corporate management ([Widyawati, 2020](#)).

The manufacturing sector is the primary focus of this study because of its substantial contribution to economic growth and its significant environmental and social impacts. As one of the largest industrial sectors in Indonesia, manufacturing plays a vital role in creating employment opportunities, increasing national productivity, and supporting export performance. However, manufacturing activities also consume large amounts of natural resources and energy while generating waste, greenhouse gas emissions, and other forms of environmental pollution. Consequently, manufacturing companies face increasing pressure from regulators, investors, customers, and the wider community to operate responsibly and adopt sustainable business practices. The implementation of Environmental, Social, and Governance (ESG) principles enables manufacturing firms to manage environmental risks, strengthen stakeholder relationships, improve corporate governance, and enhance long-term competitiveness. Furthermore, comprehensive ESG disclosure serves as an important communication mechanism that demonstrates a company's commitment to sustainability and provides stakeholders, particularly shareholders and investors, with relevant information for evaluating corporate performance beyond traditional financial indicators.

ESG regulations in Indonesia have gradually evolved. The Indonesian Financial Services Authority (*Otoritas Jasa Keuangan/OJK*), through Regulation No. 51/POJK.03/2017, requires public companies to prepare sustainability reports. Subsequently, in 2021, OJK issued Circular Letter No. 16/SEOJK.04/2021 to strengthen the sustainability reporting framework for listed companies ([Otoritas, 2021](#)). These regulations were introduced in response to increasing pressure from various stakeholders for greater corporate transparency regarding environmental, social, and governance impacts. Despite these regulatory developments, the quality of ESG disclosure in Indonesia remains uneven. The quality, consistency, and completeness of sustainability reporting among companies listed on the Indonesia Stock Exchange (IDX) vary considerably, and some companies have yet to comply fully with the required disclosure standards. This condition is reflected in a survey conducted by the Indonesian Institute for Corporate [Indonesian \(2023\)](#), which found that 68% of 150 surveyed companies still faced difficulties integrating ESG data into their financial reporting.

At the regional level, ESG disclosure also faces substantial challenges across Southeast Asia. Overall, sustainability disclosure levels in the region remain below 50%, including in Indonesia, primarily because of incomplete regulatory frameworks, relatively weak pressure from domestic investors, limited corporate awareness of sustainability issues, and reporting standards that continue to evolve ([ASEAN, 2022](#)). In addition, the implementation of ESG practices varies considerably among countries due to differences in institutional quality, economic development, governance systems, and the maturity of capital markets. Many companies still regard ESG reporting as a compliance requirement rather than a strategic tool for value creation, risk management, and long-term competitiveness. Consequently, sustainability reports often emphasize regulatory compliance instead of providing comprehensive, transparent, and decision-useful information for stakeholders. These regional challenges underscore the importance of evaluating the quality of ESG disclosure, particularly in emerging markets such as Indonesia, where sustainability reporting continues to develop alongside regulatory reforms and increasing stakeholder expectations.

Previous empirical studies have demonstrated that high-quality ESG disclosure provides substantial benefits for companies. [Suretno, Adrianto, and Alfarisi \(2022\)](#) found that ESG disclosure has a positive and significant relationship with firm value among companies listed on the IDX, as it helps reduce information asymmetry between management and investors while enhancing corporate transparency and accountability. However, previous findings also reveal several inconsistencies. Companies with high profitability, as measured by Return on Assets (ROA) and Return on Equity (ROE), do not necessarily achieve high ESG disclosure scores because ESG is often viewed as a strategic initiative to enhance business performance and corporate reputation rather than merely a

regulatory obligation ([Alsayegh, & Homayoun, 2020](#); [Daugaard, & Ding, 2022](#)). This distinction between mandatory disclosure requirements and the actual quality of ESG disclosure constitutes the primary motivation for this study.

As ESG regulations become more stringent and investor interest in sustainability continues to increase, further research is needed to reassess the quality of ESG disclosure practices in Indonesia. Accordingly, this study analyzes the quality of ESG disclosure among manufacturing companies listed on the Indonesia Stock Exchange during the 2021–2025 period, with the objective of providing empirical evidence that can support regulators, companies, and investors in improving sustainability reporting practices.

2. Literature Review and Hypothesis/es Development

2.1 Firm Size and ESG Disclosure Quality

Firm size is widely recognized as one of the most influential determinants of ESG disclosure quality. According to Legitimacy Theory, larger companies are subject to greater public visibility and stakeholder scrutiny than smaller firms. As organizations expand, they attract increased attention from investors, regulators, the media, customers, and local communities. Consequently, large firms are expected to disclose more comprehensive sustainability information to maintain organizational legitimacy and demonstrate accountability for their environmental and social impacts ([Dowling, & Pfeffer, 1975](#); [Deegan, 2002](#)).

From the perspective of Stakeholder Theory, large companies interact with a broader and more diverse stakeholder base, increasing the demand for transparent and reliable ESG information ([Freeman, 1984](#)). In addition, larger firms generally possess greater financial, technological, and human resources to develop sustainability programs, establish internal ESG governance systems, and prepare high-quality sustainability reports. Comprehensive ESG disclosure also helps reduce information asymmetry between management and external stakeholders while strengthening corporate reputation and investor confidence.

Previous empirical studies consistently report a positive association between firm size and ESG disclosure quality. ([Schreck & Raithel, 2018](#)) found that larger firms are more likely to publish extensive sustainability information because they possess greater reporting capabilities and experience stronger political and social pressure. Similarly, [So, Haron, Gui, Princes, and Sari \(2021\)](#) concluded that firm size is one of the strongest predictors of sustainability disclosure across industries. In the Indonesian context, [Putri and Nasih \(2022\)](#) also reported that larger manufacturing companies listed on the Indonesia Stock Exchange tend to achieve higher ESG disclosure scores than smaller firms. Based on these theoretical arguments and empirical findings, the following hypothesis is proposed:

H₁: Firm size has a positive and significant effect on the ESG disclosure quality of manufacturing companies listed on the Indonesia Stock Exchange.

2.2 Profitability and ESG Disclosure Quality

Profitability reflects a company's financial performance and its ability to generate earnings from business operations. Companies with higher profitability generally possess greater financial flexibility to invest in sustainability initiatives, including environmental protection programs, employee welfare, community development, governance improvements, and ESG reporting systems. According to Stakeholder Theory, profitable firms are expected to meet the increasing expectations of stakeholders by providing transparent information regarding both financial and non-financial performance ([Freeman, 1984](#)). High-quality ESG disclosure therefore becomes an important instrument for strengthening stakeholder trust and corporate accountability.

From the perspective of Legitimacy Theory, financially successful companies have stronger incentives to communicate their sustainability achievements to preserve legitimacy and enhance corporate reputation. ESG disclosure enables profitable firms to demonstrate that their financial success is

achieved through responsible and sustainable business practices rather than solely through economic performance. Furthermore, sustainability reporting can enhance investor confidence and reduce information asymmetry by providing additional information beyond conventional financial statements ([Gholami, Murray, & Sands, 2022](#)).

Empirical evidence generally supports a positive relationship between profitability and ESG disclosure quality. Companies with stronger financial performance tend to disclose more comprehensive sustainability information because they have sufficient resources to support reporting activities ([Schreck & Raithe, 2018](#)). Nevertheless, several studies report inconsistent findings. [Xie, Nozawa, Yagi, Fujii, and Managi \(2019\)](#) suggested that the relationship may not always be linear because firms experiencing weaker financial performance may also increase ESG disclosure to improve corporate image and divert stakeholder attention from declining profitability. Despite these mixed findings, profitability is generally expected to enhance ESG disclosure quality.

H₂: Profitability has a positive and significant effect on the ESG disclosure quality of manufacturing companies listed on the Indonesia Stock Exchange.

2.3 Leverage and ESG Disclosure Quality

Leverage represents the extent to which a company finances its assets through debt. A high leverage ratio indicates greater dependence on external financing and higher financial obligations, which may influence management decisions regarding voluntary corporate disclosures. Companies with substantial debt often prioritize debt servicing and financial stability, potentially limiting the resources available for sustainability initiatives and comprehensive ESG reporting ([Raimo, Caragnano, Zito, Vitolla, & Mariani, 2021](#)).

According to Stakeholder Theory, creditors constitute one of the company's most important stakeholder groups because they require reliable information to evaluate financial risk. While greater leverage may increase the demand for transparency, firms with high debt levels may simultaneously avoid extensive ESG disclosure if they believe that additional reporting could increase external scrutiny regarding financial risks or operational weaknesses ([Duran & Rodrigo, 2018](#)). Consequently, management may focus primarily on mandatory financial disclosures rather than voluntary sustainability reporting.

Previous empirical studies generally suggest a negative relationship between leverage and ESG disclosure quality. [Wahyuningrum, Budihardjo, Muhammad, Djajadikerta, and Trireksani \(2020\)](#) found that companies with higher financial leverage tend to provide less extensive sustainability disclosure because of resource constraints and financial pressures. Similar findings have been reported in studies examining emerging markets, where firms with greater debt burdens allocate fewer resources to voluntary ESG reporting activities. However, several studies have also found insignificant or positive relationships, indicating that the influence of leverage may vary depending on regulatory environments and stakeholder expectations. In the Indonesian manufacturing sector, leverage is expected to reduce the quality of ESG disclosure because financially constrained firms are more likely to prioritize operational and financial obligations over sustainability reporting.

H₃: Leverage has a negative and significant effect on the ESG disclosure quality of manufacturing companies listed on the Indonesia Stock Exchange.

2.4 Institutional Ownership and ESG Disclosure Quality

Institutional ownership refers to the proportion of company shares held by institutional investors such as pension funds, insurance companies, investment managers, banks, and mutual funds. Institutional investors generally possess greater expertise, resources, and incentives to monitor corporate management than individual investors. Consequently, they play an important role in promoting transparency, accountability, and effective corporate governance.

From the perspective of Stakeholder Theory, institutional investors represent influential stakeholders who expect companies to disclose comprehensive ESG information to support investment

decision-making and long-term value creation ([Freeman, 1984](#)). Increasingly, institutional investors integrate ESG considerations into their investment strategies and actively encourage firms to improve sustainability performance. Through shareholder engagement and voting rights, they can pressure management to enhance both ESG practices and disclosure quality.

Empirical evidence also supports this relationship. [Liu and Wang \(2022\)](#) found that institutional investors significantly contribute to improving corporate environmental and social performance through active monitoring. Companies with higher institutional ownership generally produce more transparent sustainability reports because institutional investors demand credible and decision-useful information ([Schiehl, & Kolahgar, 2021](#); [García, Hussain, Khan, & Martínez, 2022](#)). In Indonesia, institutional ownership is also expected to encourage companies to comply with sustainability reporting requirements and improve ESG disclosure quality in response to growing investor expectations and regulatory developments.

H₄: Institutional ownership has a positive and significant effect on the ESG disclosure quality of manufacturing companies listed on the Indonesia Stock Exchange.

2.5 Regulatory Pressure and ESG Disclosure Quality

Regulatory pressure has become one of the primary external drivers of ESG disclosure worldwide. Governments and financial regulators increasingly require companies to provide transparent sustainability information to enhance market efficiency, investor protection, and corporate accountability. In Indonesia, sustainability reporting has received significant regulatory support through OJK Regulation No. 51/POJK.03/2017 and OJK Circular Letter No. 16/SEOJK.04/2021, which establish guidelines for sustainability reporting among publicly listed companies.

According to Legitimacy Theory, companies respond to regulatory pressure by aligning their reporting practices with prevailing legal and societal expectations to maintain organizational legitimacy ([Dowling & Pfeffer, 1975](#)). Compliance with sustainability reporting regulations enables firms to demonstrate their commitment to responsible business practices while reducing reputational and regulatory risks. As reporting requirements become more comprehensive, companies are expected not only to increase the quantity of ESG information disclosed but also to improve its quality, reliability, and comparability.

Previous studies indicate that stronger regulatory frameworks contribute significantly to improvements in sustainability reporting quality. [Widyawati \(2020\)](#) reported that the implementation of OJK sustainability reporting regulations increased the number of sustainability reports published by Indonesian listed companies. International evidence also suggests that mandatory sustainability reporting requirements improve disclosure quality by encouraging greater standardization and transparency. Therefore, stronger regulatory pressure is expected to positively influence the quality of ESG disclosure among manufacturing companies listed on the Indonesia Stock Exchange.

H₅: Regulatory pressure has a positive and significant effect on the ESG disclosure quality of manufacturing companies listed on the Indonesia Stock Exchange.

3. Research Methodology

3.1 Research Design

This study employed a descriptive quantitative research design using the content analysis method. This approach was selected because it is appropriate for systematically measuring and evaluating the quality of Environmental, Social, and Governance (ESG) disclosures based on observable and quantifiable corporate reporting documents ([Krippendorff, 2018](#)). Content analysis was conducted by examining sustainability reports and annual reports published by manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2025 period. The analysis focused on assessing the extent and quality of ESG disclosures using a standardized disclosure index developed from the Global Reporting Initiative (GRI) Standards 2021.

3.2 Population and Sample

The population of this study consists of all manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2025 period. Based on IDX data, a total of 237 manufacturing companies were listed as of December 2024. The research sample was selected using a purposive sampling technique to ensure that only companies meeting the study objectives were included.

The sampling criteria were as follows:

1. Manufacturing companies consistently listed on the Indonesia Stock Exchange (IDX) throughout the 2021–2025 period.
2. Companies that consistently published sustainability reports and/or annual reports containing ESG-related information during the observation period.
3. Companies whose shares were not suspended from trading during the study period.
4. Companies with publicly accessible reports and complete data required for the analysis.

Based on these criteria, 85 manufacturing companies were selected, resulting in 425 firm-year observations over the five-year study period. The list of sample companies is presented in the following table:

Table 1. List of Research Sample Companies

No.	Code	Company	Sub-sector
1	INTP	Indocement Tunggul Prakarsa Tbk	Basic Industry & Chemicals
2	SMGR	Semen Indonesia (Persero) Tbk	Basic Industry & Chemicals
3	SMCB	Solusi Bangun Indonesia Tbk	Basic Industry & Chemicals
4	AMFG	Asahimas Flat Glass Tbk	Basic Industry & Chemicals
5	TOTO	Surya Toto Indonesia Tbk	Basic Industry & Chemicals
6	ARNA	Arwana Citramulia Tbk	Basic Industry & Chemicals
7	MLIA	Mulia Industrindo Tbk	Basic Industry & Chemicals
8	ISSP	Steel Pipe Industry of Indonesia Tbk	Basic Industry & Chemicals
9	JPFA	Japfa Comfeed Indonesia Tbk	Basic Industry & Chemicals
10	BRPT	Barito Pacific Tbk	Basic Industry & Chemicals
11	TPIA	Chandra Asri Pacific Tbk	Basic Industry & Chemicals
12	UNIC	Unggul Indah Cahaya Tbk	Basic Industry & Chemicals
13	INCI	Intanwijaya Internasional Tbk	Basic Industry & Chemicals
14	SRSN	Indo Acidatama Tbk	Basic Industry & Chemicals
15	EKAD	Ekadharma International Tbk	Basic Industry & Chemicals

No.	Code	Company	Sub-sector
16	DPNS	Duta Pertiwi Nusantara Tbk	Basic Industry & Chemicals
17	AKPI	Argha Karya Prima Industry Tbk	Basic Industry & Chemicals
18	IPOL	Indopoly Swakarsa Industry Tbk	Basic Industry & Chemicals
19	TRST	Trias Sentosa Tbk	Basic Industry & Chemicals
20	IGAR	Champion Pacific Indonesia Tbk	Basic Industry & Chemicals
21	FASW	Fajar Surya Wisesa Tbk	Basic Industry & Chemicals
22	INKP	Indah Kiat Pulp & Paper Tbk	Basic Industry & Chemicals
23	TKIM	Pabrik Kertas Tjiwi Kimia Tbk	Basic Industry & Chemicals
24	SPMA	Suparma Tbk	Basic Industry & Chemicals
25	ASII	Astra International Tbk	Miscellaneous Industry
26	ASTRA	Astra Otoparts Tbk	Miscellaneous Industry
27	AUTO	Astra Otoparts Tbk	Miscellaneous Industry
28	BRAM	Indo Kordsa Tbk	Miscellaneous Industry
29	GDYR	Goodyear Indonesia Tbk	Miscellaneous Industry
30	IMAS	Indomobil Sukses Internasional Tbk	Miscellaneous Industry
31	INDS	Indospring Tbk	Miscellaneous Industry
32	LPIN	Multi Prima Sejahtera Tbk	Miscellaneous Industry
33	MASA	Multistrada Arah Sarana Tbk	Miscellaneous Industry
34	NIPS	Nipress Tbk	Miscellaneous Industry
35	PRAS	Prima Alloy Steel Universal Tbk	Miscellaneous Industry
36	SMSM	Selamat Sempurna Tbk	Miscellaneous Industry
37	ADMG	Polychem Indonesia Tbk	Miscellaneous Industry
38	ARGO	Argo Pantes Tbk	Miscellaneous Industry
39	CNTX	Century Textile Industry Tbk	Miscellaneous Industry
40	ERTX	Eratex Djaja Tbk	Miscellaneous Industry
41	HDTX	Panasia Indo Resources Tbk	Miscellaneous Industry
42	PBRX	Pan Brothers Tbk	Miscellaneous Industry
43	RICY	Ricky Putra Globalindo Tbk	Miscellaneous Industry
44	STAR	Star Petrochem Tbk	Miscellaneous Industry
45	UNIT	Nusantara Inti Corpora Tbk	Miscellaneous Industry
46	BATA	Sepatu Bata Tbk	Miscellaneous Industry

No.	Code	Company	Sub-sector
47	IKBI	Sumi Indo Kabel Tbk	Miscellaneous Industry
48	JECC	Jembo Cable Company Tbk	Miscellaneous Industry
49	KBLI	KMI Wire and Cable Tbk	Miscellaneous Industry
50	SCCO	Supreme Cable Manufacturing Tbk	Miscellaneous Industry
51	VOKS	Voksel Electric Tbk	Miscellaneous Industry
52	INAI	Indal Aluminium Industry Tbk	Miscellaneous Industry
53	LION	Lion Metal Works Tbk	Miscellaneous Industry
54	LMSH	Lionmesh Prima Tbk	Miscellaneous Industry
55	PICO	Pelangi Indah Canindo Tbk	Miscellaneous Industry
56	UNVR	Unilever Indonesia Tbk	Consumer Goods Industry
57	ICBP	Indofood CBP Sukses Makmur Tbk	Consumer Goods Industry
58	INDF	Indofood Sukses Makmur Tbk	Consumer Goods Industry
59	MYOR	Mayora Indah Tbk	Consumer Goods Industry
60	ROTI	Nippon Indosari Corpindo Tbk	Consumer Goods Industry
61	SKBM	Sekar Bumi Tbk	Consumer Goods Industry
62	SKLT	Sekar Laut Tbk	Consumer Goods Industry
63	ULTJ	Ultra Jaya Milk Industry Tbk	Consumer Goods Industry
64	CLEO	Sariguna Primatirta Tbk	Consumer Goods Industry
65	DLTA	Delta Djakarta Tbk	Consumer Goods Industry
66	MLBI	Multi Bintang Indonesia Tbk	Consumer Goods Industry
67	HMSP	H.M. Sampoerna Tbk	Consumer Goods Industry
68	GGRM	Gudang Garam Tbk	Consumer Goods Industry
69	WIIM	Wismilak Inti Makmur Tbk	Consumer Goods Industry
70	SIDO	Industri Jamu & Farmasi Sido Muncul Tbk	Consumer Goods Industry
71	KLBF	Kalbe Farma Tbk	Consumer Goods Industry
72	PYFA	Pyridam Farma Tbk	Consumer Goods Industry
73	MERK	Merck Tbk	Consumer Goods Industry

No.	Code	Company	Sub-sector
74	TSPC	Tempo Scan Pacific Tbk	Consumer Goods Industry
75	DVLA	Darya-Varia Laboratoria Tbk	Consumer Goods Industry
76	PEHA	Phapros Tbk	Consumer Goods Industry
77	KAEF	Kimia Farma Tbk	Consumer Goods Industry
78	SQBB	Taisho Pharmaceutical Indonesia Tbk	Consumer Goods Industry
79	ADES	Akasha Wira International Tbk	Consumer Goods Industry
80	MBTO	Martina Berto Tbk	Consumer Goods Industry
81	MRAT	Mustika Ratu Tbk	Consumer Goods Industry
82	TCID	Mandom Indonesia Tbk	Consumer Goods Industry
83	KINO	Kino Indonesia Tbk	Consumer Goods Industry
84	CINT	Chitose Internasional Tbk	Consumer Goods Industry
85	WOOD	Integra Indocabinet Tbk	Consumer Goods Industry

Table 1 shows the final sample of 85 manufacturing companies listed on the Indonesia Stock Exchange (IDX) that satisfied all purposive sampling criteria, resulting in 425 firm-year observations during the 2021–2025 study period.

3.3 Research Variables

3.3.1 Dependent Variable

ESG Disclosure Quality Index (ESG). The quality of ESG disclosure was measured using a disclosure index developed based on the GRI Standards 2021. The index consists of three sub-indices: (1) the Environmental Index, comprising 14 disclosure indicators; (2) the Social Index, comprising 18 disclosure indicators; and (3) the Governance Index, comprising 10 disclosure indicators. Each indicator was evaluated using a dichotomous scoring approach, where a score of 1 was assigned if the company provided complete and high-quality disclosure, and 0 if the information was absent or inadequately disclosed. The overall ESG disclosure quality score was calculated as the proportion of disclosed indicators relative to the total applicable indicators.

3.3.2 Independent Variables

1. Firm Size (SIZE): Measured by the natural logarithm of total assets.
2. Return on Assets (ROA): Measured as net income divided by total assets.
3. Leverage (LEV): Measured as the ratio of total liabilities to total assets.
4. Institutional Ownership (INST): Measured as the percentage of shares owned by institutional investors.

3.4 Control Variables

1. Firm Age (AGE): Measured as the number of years since the company was listed on the Indonesia Stock Exchange (IDX).
2. Year Dummy: Included to capture temporal effects associated with changes in ESG-related regulations and reporting practices during the observation period.

3.4.1 Data Analysis Technique

The data analysis was conducted in several stages. First, descriptive statistical analysis was performed to examine the development of ESG disclosure quality during the 2021–2025 study period. Second, difference tests, including the paired-sample *t*-test and one-way analysis of variance (ANOVA), were employed to assess whether ESG disclosure quality changed significantly across the observation years. Third, panel data regression analysis was conducted to examine the determinants of ESG disclosure quality. Depending on the results of the Hausman test, either the Fixed Effects Model (FEM) or the Random Effects Model (REM) was selected as the most appropriate estimation model.

The panel regression model is specified as follows:

$$\text{ESG} = \alpha + \beta_1\text{SIZE} + \beta_2\text{ROA} + \beta_3\text{LEV} + \beta_4\text{INST} + \beta_5\text{AGE} + \sum \gamma_t \text{YEAR}_t + \varepsilon \quad (1)$$

Formula 1 specifies the panel regression model used to examine the effects of firm size, profitability, leverage, institutional ownership, firm age, and year-specific regulatory effects on the ESG disclosure quality of manufacturing companies listed on the Indonesia Stock Exchange (IDX). Where ESG_{*it*} represents the ESG disclosure quality index of company *i* in year *t*; α denotes the intercept; β_1 – β_5 represent the regression coefficients; YEAR is the year dummy variable capturing temporal regulatory effects; and ε_{it} is the error term. All statistical analyses were performed using EViews and IBM SPSS Statistics.

3.4.2 Content Analysis Reliability Test

To ensure consistency in the content analysis coding process, an inter-rater reliability test was conducted using Cohen's Kappa coefficient. Two independent coders evaluated a randomly selected 20% of the total sample. The calculated Cohen's Kappa coefficient was 0.82, indicating substantial agreement between the coders according to the classification proposed by [Landis and Koch \(1977\)](#). This result demonstrates that the coding procedure was sufficiently reliable to ensure the consistency and credibility of the ESG disclosure assessment.

4. Results and Discussions

4.1 Descriptive Statistics

Descriptive statistics for the research variables during the 2021–2025 period are presented in Table 2.

Table 2. Descriptive Statistics of the Research Variables

Variable	N	Minimum	Maximum	Mean	Std. Dev.
ESG Index	425	12.4	78.6	41.35	15.72
ENV Index	425	8.5	75.2	38.12	16.44
SOC Index	425	15.3	80.1	43.28	14.98
GOV Index	425	20.0	85.5	52.67	13.21
SIZE (Ln)	425	24.12	33.85	28.94	2.16
ROA (%)	425	-12.4	35.6	5.42	7.83
LEV	425	0.05	0.92	0.43	0.18

Variable	N	Minimum	Maximum	Mean	Std. Dev.
INST (%)	425	12.5	96.4	58.73	19.45

Table 2 shows that the average ESG disclosure quality index of manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2025 period was 41.35 on a 100-point scale, with values ranging from 12.40 to 78.60. These findings indicate that, on average, manufacturing companies disclosed approximately 41% of the ESG indicators included in the disclosure index. The relatively high standard deviation (15.72) suggests considerable variation in ESG disclosure quality across firms, reflecting differences in sustainability reporting practices, corporate resources, and stakeholder engagement.

Among the three ESG dimensions, the Governance (GOV) index recorded the highest average score (52.67), followed by the Social (SOC) index (43.28), while the Environmental (ENV) index exhibited the lowest average score (38.12). This pattern suggests that governance-related information is disclosed more comprehensively than environmental and social information. The finding is consistent with Hahn and Kühnen (2013), who argued that governance disclosures are generally more standardized and easier to measure because they are closely linked to corporate governance regulations and capital market requirements. In contrast, environmental disclosures often require more extensive quantitative data, technical measurements, and sustainability performance indicators, making them relatively more challenging to report comprehensively.

4.2 Trends in ESG Disclosure Quality During 2021–2025

Table 3 presents the annual average ESG disclosure quality index for manufacturing companies listed on the Indonesia Stock Exchange during the 2021–2025 period.

Table 3. Annual Average ESG Disclosure Quality Index, 2021–2025

Year	ENV Index	SOC Index	GOV Index	ESG Index	Δ ESG (%)
2021	31.24	37.45	47.32	35.0	-
2022	35.12	40.18	49.85	38.15	+9.00
2023	38.9	43.72	52.2	41.27	+8.18
2024	40.85	46.58	55.78	44.07	+6.79
2025*	44.5	48.45	58.2	47.28	+7.27

Source: Processed by the authors, 2025

Table 3 shows a consistent upward trend in the quality of ESG disclosures among manufacturing companies listed on the Indonesia Stock Exchange (IDX) throughout the 2021–2025 period. The average ESG disclosure index increased from 35.00 in 2021 to 47.28 in 2025, representing an overall increase of 35.09% during the study period. The largest annual improvement occurred between 2021 and 2022, when the ESG index increased by 9.00%. This substantial increase may be attributed to the implementation of OJK Circular Letter No. 16/SEOJK.04/2021, which strengthened sustainability reporting guidelines and encouraged publicly listed companies to improve the quality and comprehensiveness of their ESG disclosures.

Among the three ESG dimensions, the Environmental (ENV) Index exhibited the greatest absolute improvement, increasing from 31.24 in 2021 to 44.50 in 2025, representing a 42.45% increase. This finding indicates that manufacturing companies have devoted increasing attention to environmental disclosure, reflecting growing awareness of environmental sustainability issues and heightened regulatory and stakeholder expectations. Nevertheless, despite this substantial improvement, the environmental dimension remained the lowest-performing ESG component throughout the observation period. This suggests that environmental disclosure continues to present the greatest reporting challenge for manufacturing companies, likely because environmental indicators require more detailed quantitative data, technical measurements, and comprehensive reporting than social and governance disclosures.

4.3 ESG Disclosure Quality by Manufacturing Sub-sector

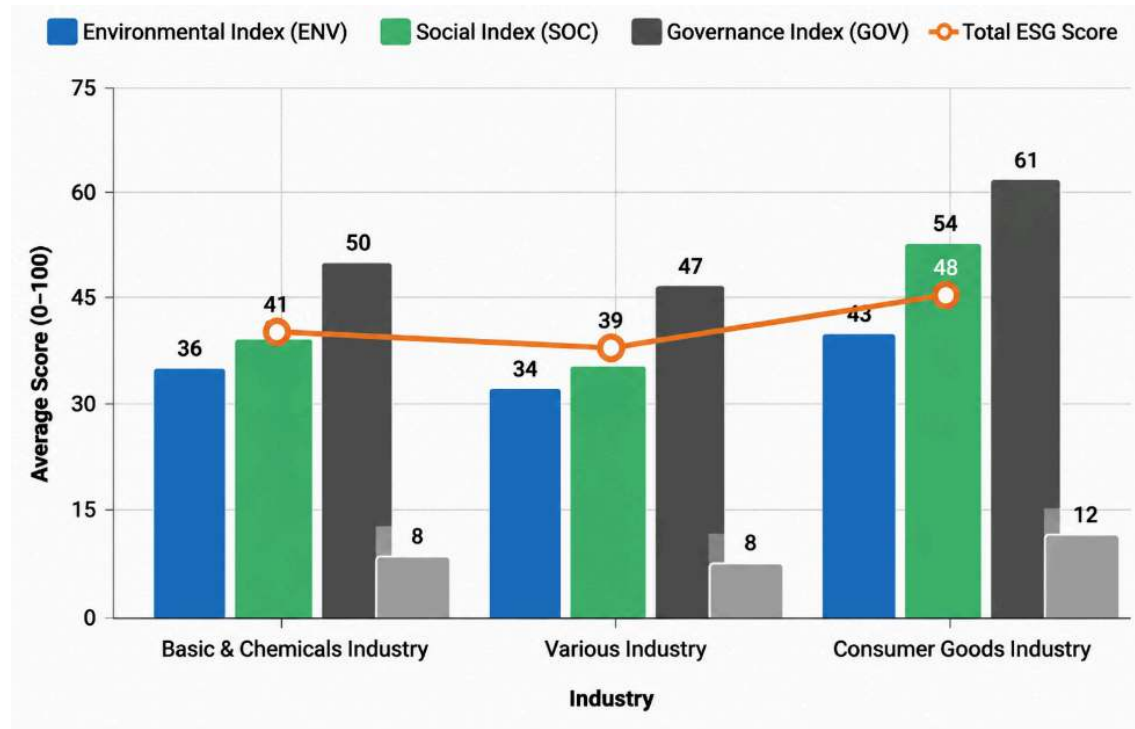


Figure 1. Average ESG Index by Manufacturing Sub-Sector (2021-2025)

Based on Figure 1, the sub-sector analysis reveals considerable variation in ESG disclosure quality across the manufacturing industry. The Consumer Goods Industry recorded the highest average ESG disclosure index (47.82), followed by the Basic Industry and Chemicals sub-sector (40.15) and the Miscellaneous Industry sub-sector (38.22). Companies operating in the Consumer Goods Industry typically have more direct interactions with consumers, making corporate reputation and public trust essential to their long-term competitiveness. Consequently, these firms have stronger incentives to provide comprehensive ESG disclosures as a means of enhancing brand reputation, demonstrating corporate responsibility, and meeting stakeholder expectations (Widyawati, 2020; García, Hussain, Khan, & Martínez, 2022). These findings support the argument that stakeholder pressure and market visibility play important roles in shaping the quality of corporate ESG disclosure.

4.4 Panel Data Regression Analysis

Before estimating the regression model, several classical assumption tests were conducted. The Hausman test produced a chi-square statistic of 18.34 with a p-value of 0.003, indicating that the Fixed Effects Model (FEM) was the most appropriate estimation model. The estimation results are presented in Table 4.

Table 4. Results of Panel Data Regression Analysis of Fixed Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Sig.
Constant	-52.340	12.456	-4.203	0.000
SIZE	3.218	0.754	4.267	0.000
ROA	0.412	0.183	2.251	0.025
LEV	-5.623	2.104	-2.672	0.008
INST	0.185	0.062	2.984	0.003
AGE	0.214	0.098	2.184	0.030
R ²	0.6234	—	—	—

Variable	Coefficient	Std. Error	t-Statistic	Sig.
Adjusted R ²	0.5987	–	–	–
F-statistic	25.342	–	–	0.000

Based on Table 4, the Adjusted R² value of 0.5987 indicates that the independent variables included in the model explain 59.87% of the variation in ESG disclosure quality, while the remaining 40.13% is explained by other factors not included in the regression model.

4.5 Hypothesis Testing

H₂: Firm Size (SIZE). The regression results show that firm size has a positive and statistically significant effect on ESG disclosure quality (coefficient = 3.218; $p < 0.01$). Therefore, *H₂* is supported. Larger manufacturing companies possess greater financial, technological, and human resources to prepare high-quality sustainability reports. In addition, they are subject to greater public scrutiny and stakeholder pressure, which encourages more comprehensive ESG disclosure. This finding is consistent with the studies of [Hörisch, Johnson, and Schaltegger \(2015\)](#).

H₃: Profitability (ROA). Profitability has a positive and statistically significant effect on ESG disclosure quality (coefficient = 0.412; $p < 0.05$). Accordingly, *H₃* is supported. Companies with stronger financial performance have greater financial capacity to invest in sustainability initiatives and develop higher-quality ESG reporting systems. These findings are consistent with the results reported by [Husada and Handayani \(2021\)](#).

H₄: Leverage (LEV). Leverage has a negative and statistically significant effect on ESG disclosure quality (coefficient = -5.623 ; $p < 0.01$). Therefore, *H₄* is supported. Companies with higher debt levels tend to allocate a larger proportion of their resources to meeting financial obligations, thereby reducing investments in sustainability initiatives and ESG reporting. This finding supports the argument of [Qodary and Tambun \(2021\)](#), who suggested that highly leveraged firms often face resource constraints that limit the quality of voluntary sustainability disclosure.

H₅: Institutional Ownership (INST). Institutional ownership has a positive and statistically significant effect on ESG disclosure quality (coefficient = 0.185; $p < 0.01$). Thus, *H₅* is supported. Institutional investors possess both the capability and the incentive to monitor corporate ESG practices, encouraging management to improve transparency, accountability, and the overall quality of ESG disclosures. This finding is consistent with [\(Dyck, Lins, Roth, & Wagner, 2019\)](#), who emphasized the active role of institutional investors in promoting corporate ESG practices.

The effect of regulatory pressure, proxied by the year dummy variable (YEAR), was significant at the overall model level, as indicated by the F-statistic. This result suggests that ESG disclosure quality improved over time in response to the gradual implementation of sustainability reporting regulations issued by the Indonesian Financial Services Authority (OJK). The most substantial improvement occurred during the 2021–2022 period, which is likely attributable to the implementation of OJK Circular Letter No. 16/SEOJK.04/2021, encouraging publicly listed companies to strengthen the quality and comprehensiveness of their sustainability reporting.

4.6 Discussion

The findings of this study generally support all of the proposed hypotheses (*H₁–H₅*). The discussion of each finding is presented as follows.

1. Trends in ESG Disclosure Quality (*H₁*)

The findings indicate a significant and consistent improvement in the ESG disclosure quality of manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2025 period. The average ESG disclosure index increased from 35.00 in 2021 to 47.28 in 2025, representing an overall increase of 35.09%. Accordingly, *H₁* is supported. This improvement suggests that the combined influence of regulatory pressure, increasing investor expectations, and greater

managerial awareness has contributed to substantial progress in corporate sustainability reporting practices in Indonesia. The largest annual increase occurred between 2021 and 2022 (9.00%), which is likely attributable to the implementation of OJK Circular Letter No. 16/SEOJK.04/2021, requiring publicly listed companies to strengthen their sustainability reporting practices.

Despite this encouraging trend, the average ESG disclosure score remained within the range of 35–47 on a 100-point scale, indicating considerable room for further improvement. This finding reflects the distinction between symbolic and substantive ESG disclosure proposed by [Clarkson, Li, Richardson, and Vasvari \(2008\)](#). While many companies disclose ESG information primarily to satisfy regulatory requirements (symbolic disclosure), ESG principles have not yet been fully integrated into their core business strategies and operational decision-making (substantive disclosure).

1. The Effect of Firm Size (H_2)

The results demonstrate that firm size (SIZE) has a positive and statistically significant effect on ESG disclosure quality (coefficient = 3.218; $p < 0.01$), thereby supporting H_2 . Larger manufacturing firms generally possess greater financial resources, human capital, and reporting infrastructure, enabling them to produce more comprehensive and higher-quality sustainability reports. In addition, large firms are subject to greater scrutiny from regulators, investors, the media, and the public, creating stronger incentives to enhance corporate transparency ([Hombach & Sellhorn, 2019](#)). These findings are consistent with [Jamil and Puat \(2021\)](#), who reported similar evidence among manufacturing firms listed on the IDX.

From the perspective of Legitimacy Theory, larger firms receive greater public attention and therefore have stronger incentives to maintain organizational legitimacy by providing comprehensive ESG disclosures ([Deegan, 2002](#)). Similarly, Stakeholder Theory suggests that large firms interact with a broader range of stakeholders, each demanding greater transparency regarding sustainability performance, thereby encouraging higher-quality ESG reporting ([Freeman, 1984](#)).

1. The Effect of Profitability (H_3)

Profitability, measured by Return on Assets (ROA), has a positive and statistically significant effect on ESG disclosure quality (coefficient = 0.412; $p < 0.05$), supporting H_3 . Companies with stronger financial performance possess greater financial capacity to invest in sustainability reporting systems, employee training related to ESG practices, and external advisory services aimed at improving the quality of sustainability reports. This finding is consistent with [Husada and Handayani \(2021\)](#), who reported a positive relationship between financial performance and ESG reporting quality among companies listed on the IDX.

Interestingly, this result differs from the paradox identified by ([Qodary, & Tambun, 2021](#); [Kusumawardani, 2022](#)), who argued that the relationship between profitability and ESG disclosure quality is not always linear. In the context of this study, the difference may be explained by the focus on the manufacturing sector, where environmental regulations and stakeholder expectations regarding sustainability reporting are generally stronger than in many other industries. Consequently, profitable manufacturing companies are more likely to allocate their financial resources to improving ESG reporting practices.

1. The Effect of Leverage (H_4)

The results indicate that leverage (LEV) has a negative and statistically significant effect on ESG disclosure quality (coefficient = -5.623 ; $p < 0.01$), supporting H_4 . Companies with higher debt levels typically experience greater financial pressure to meet creditor obligations, reducing the availability of resources for investments in sustainability reporting and ESG initiatives. This finding reflects the trade-off between fulfilling short-term financial commitments and investing in long-term corporate transparency and sustainability. From the perspective of Stakeholder Theory, highly leveraged firms tend to prioritize the interests of creditors over those of other stakeholder groups seeking ESG-related

information ([Clarkson, 1995](#); [Ningwati, Septiyanti, & Desriani, 2022](#)). Furthermore, financial constraints resulting from substantial debt burdens may reduce management's willingness to engage in voluntary ESG disclosure, as managerial attention shifts toward restoring the company's financial performance ([Qodary & Tambun, 2021](#)).

1. The Effect of Institutional Ownership (H_5)

The results show that institutional ownership (INST) has a positive and statistically significant effect on ESG disclosure quality (coefficient = 0.185; $p < 0.01$), thereby supporting H_5 . Institutional investors holding substantial ownership stakes possess both the capability and the incentive to actively monitor corporate ESG practices. Through voting rights at shareholders' meetings and direct engagement with management, institutional investors can encourage companies to improve transparency, accountability, and the quality of sustainability reporting.

These findings support the argument of [Dyck, Lins, Roth, and Wagner \(2019\)](#), who identified institutional investors as key drivers of corporate social responsibility and ESG practices worldwide. In the Indonesian context, the growing proportion of institutional investors adopting responsible investment principles, together with the global expansion of Environmental, Social, and Governance (ESG) investing, has contributed to improvements in the quality of ESG disclosure among manufacturing companies listed on the Indonesia Stock Exchange.

1. The Dominance of the Governance Dimension and the Challenges of Environmental Disclosure

The findings indicating that the Governance (GOV) dimension consistently achieved higher disclosure scores than the Environmental (ENV) dimension can be explained from both theoretical and practical perspectives. From the perspective of Legitimacy Theory, governance disclosures are generally more comprehensive because corporate governance requirements are more clearly defined and standardized under Indonesia's capital market regulations, making them easier for companies to implement, measure, and document ([Firmansyah, Hadi, Sheila, & Trisnawati, 2021](#); [Priandhana, 2022](#)). From a practical perspective, environmental disclosure remains relatively more voluntary and requires sophisticated measurement systems, including carbon emission monitoring, waste management, energy consumption tracking, and environmental performance assessments. Such reporting infrastructure is not yet uniformly available across manufacturing companies.

This finding is particularly important given that the manufacturing sector is among the industries with the greatest environmental impact. Although the Environmental Index recorded the largest absolute improvement during the study period, increasing from 31.24 to 44.50 (+42.45%), it remained the lowest-performing ESG dimension throughout the observation period. These results suggest that more specific and measurable environmental disclosure requirements from the Indonesian Financial Services Authority (OJK) are needed to encourage more substantive improvements in environmental reporting practices among manufacturing companies.

1. Variations Across Manufacturing Sub-sectors

The variation in ESG disclosure quality across manufacturing sub-sectors provides additional insights into corporate sustainability reporting practices. The Consumer Goods Industry recorded the highest average ESG disclosure index (47.82), followed by the Basic Industry and Chemicals sub-sector (40.15) and the Miscellaneous Industry sub-sector (38.22). Companies in the Consumer Goods Industry generally operate in markets with direct interactions with end consumers, giving them stronger incentives to maintain brand reputation, strengthen consumer trust, and enhance corporate image through comprehensive ESG disclosures ([Hardi, Idroes, Hardia, Fajri, Furqan, Noviandy, & Utami, 2023](#)).

In contrast, companies in the Miscellaneous Industry are generally more oriented toward business-to-business (B2B) markets and therefore experience relatively lower pressure from end consumers regarding sustainability issues. As a result, their incentives to improve the quality and

comprehensiveness of ESG disclosures tend to be weaker. These findings suggest that stakeholder visibility and market orientation are important determinants of ESG disclosure quality, complementing the effects of firm characteristics identified in the regression analysis.

5. Conclusions

This study examined the quality of ESG disclosure among manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2025 period using content analysis based on the GRI Standards 2021. The analysis was conducted on 85 manufacturing companies, resulting in 425 firm-year observations. Several conclusions can be drawn from the findings. First, the quality of ESG disclosure improved significantly and consistently throughout the study period, with the average ESG disclosure index increasing from 35.00 in 2021 to 47.28 in 2025, representing an overall increase of 35.09%. Therefore, H1 is supported. The largest improvement occurred between 2021 and 2022, which is closely associated with the implementation of OJK Circular Letter No. 16/SEOJK.04/2021. Second, substantial variation in ESG disclosure quality remains among manufacturing companies, as reflected by the wide range of ESG scores, from 12.40 to 78.60, indicating differences in organizational capabilities, resources, and commitment to sustainability reporting. Third, the Governance dimension achieved the highest average disclosure score (52.67), followed by the Social dimension (43.28), while the Environmental dimension remained the weakest (38.12), highlighting the need for greater attention to environmental reporting practices. Fourth, firm size (SIZE) and profitability (ROA) have positive and statistically significant effects on ESG disclosure quality, supporting H2 and H3. In contrast, leverage (LEV) has a negative and statistically significant effect, supporting H4, whereas institutional ownership (INST) has a positive and statistically significant effect, supporting H5. Overall, the regression model explains 59.87% of the variation in ESG disclosure quality among manufacturing companies listed on the Indonesia Stock Exchange.

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Author Contributions

FN conceptualized the study, collected the data, conducted the formal analysis, and prepared the original draft of the manuscript. WOR contributed to the research methodology, supervised the study, reviewed and edited the manuscript, and validated the final version. Both authors discussed the results, contributed to the interpretation of the findings, and approved the final manuscript.

Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this study. The research was conducted independently without any commercial or financial relationships that could be construed as a potential conflict of interest.

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