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GREEN PRACTICES AND CORPORATE SUSTAINABILITY VALUE IN AGROINDUSTRY COMPANY X, NORTH SUMATRA

Astuti[1*], Rosdita Indah Yuniawati[2], Dede Yusuf Maulana[3], Helda Jaya Puspita[4]

[1]Accounting Study Program, Faculty of Economics and Business, Universitas Sumatera Utara, Indonesia
[2]Islamic Economics Study Program, Faculty of Islamic Economics and Business, Institut Pesantren Babakan Cirebon, Indonesia
[3]Management Study Program, Faculty of Economics, Universitas Kartamulia Purwakarta, Indonesia
[4]Agroindustry Management Study Program, Department of Agribusiness Management, Politeknik Negeri Jember, Indonesia

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ABSTRACT

This study examined how green practices influence corporate sustainability value in Agroindustry Company X in North Sumatra, Indonesia. The study used a quantitative descriptive case-study design based on annual reports, sustainability-related documents, direct observation, and structured interviews with three managers for the 2020-2024 period. The green practice index was constructed from four dimensions: environmental management, energy efficiency, waste management, and green purchasing. Each dimension was scored from 1 to 25 and then summed into a 0-100 index. Sustainability value was constructed as a 0-1 composite ratio from normalized economic, social, and environmental indicators. Data were analyzed through trend analysis and simple linear regression. The green practice score increased from 52 in 2020 to 81 in 2024, while sustainability value increased from 0.48 to 0.79. Regression results show a positive relationship between green practices and sustainability value, with a coefficient of 0.0109 and R^2 of 0.990. Because the dataset used five annual observations from one firm, the result is interpreted as exploratory case evidence. The study shows that systematic environmental practices can support long-term value creation through efficiency, transparency, and stakeholder confidence.

1. INTRODUCTION

Environmental sustainability has become an urgent issue for agroindustry firms because their operations depend on land, water, energy, packaging materials, and biological resources. In this sector, weak environmental management can increase waste, emissions, resource losses, and social pressure from surrounding communities. Green practices offer a practical response because they integrate environmental considerations into production, procurement, waste control, energy use, and reporting systems. Recent green innovation research explains that environmental capability can become a strategic organizational resource when firms combine knowledge acquisition, environmental investment, and process improvement (Awan et al., 2021).

The urgency is stronger for agroindustry companies in regional areas such as North Sumatra, where business activities often operate close to plantation areas, processing facilities, local suppliers, and community settlements. Firms in this setting must show that environmental initiatives support both operational efficiency and stakeholder accountability. Green practices do not only relate to compliance. They also relate to how firms create sustainability value by balancing financial viability, social responsibility, and environmental protection. Sustainability-oriented innovation can strengthen firm competitiveness when environmental programs are connected with operational improvement and market relevance (Hermundsdottir & Aspelund, 2021). Green capabilities and green purchasing also support triple bottom line performance because they connect environmental practice with economic, social, and ecological outcomes (Khan et al., 2023).

In the accounting field, green practices become visible through environmental cost recognition, environmental performance measurement, sustainability disclosure, and resource-efficiency monitoring. These practices help managers understand whether environmental programs create measurable value

*Corresponding author.
E-mail: astuti@gmail.com (First Author)

rather than only symbolic compliance. ESG research also shows that environmental indicators need clear scoring logic because environmental performance may differ across firms and measurement systems (Senadheera et al., 2021). Evidence from large manufacturing firms shows that green innovation has a positive relationship with environmental performance when it is supported by organizational commitment and measurable implementation (Rehman et al., 2021).

Company X in North Sumatra operates in a resource-based business environment that requires careful environmental governance. The firm has introduced several green initiatives since 2020, including energy-efficiency programs, waste-treatment improvements, recycling initiatives, and greener procurement procedures. However, the managerial question remains clear. The company needs empirical evidence on whether the improvement in green practices is followed by measurable improvement in sustainability value. This question is important because green initiatives often require investment, technical coordination, and managerial commitment before benefits become visible.

Previous research has discussed eco-innovation, green product development, green purchasing, ESG performance, and environmental management in broad manufacturing contexts. Khan et al. (2021) emphasize that green product innovation depends on product design, stakeholder pressure, and long-term market adaptation. Suki et al. (2023) show that green innovation becomes more effective when it is supported by green intellectual capital and green supply chain management. Le and Govindan (2024) further report that managerial environmental concern can strengthen the relationship between green innovation and corporate performance. However, limited studies provide case-based empirical evidence on how a firm-level green practice index influences sustainability value in Indonesian regional companies, especially in agroindustry settings.

This study addresses that gap by analyzing the influence of green practices on the sustainability value of Company X during 2020-2024. The study is guided by one research question: to what extent do green practices influence corporate sustainability value? The study contributes to environmental accounting and sustainability management by showing how a firm-level green practice index can be linked to sustainability value measurement. The findings can help managers design measurable environmental programs and support more transparent sustainability reporting.

2. METHODS

This study used a quantitative descriptive approach with a case-study design. The unit of analysis was Company X, an agroindustry-related firm located in Deli Serdang Regency, North Sumatra. The research focused on the 2020-2024 period because the company began to implement more systematic green initiatives in 2020. The case-study design was selected because the study aimed to examine a specific organizational setting and to connect operational environmental practices with sustainability value indicators over time. The independent variable was green practices. This variable was measured through a green practice index with four dimensions: environmental management, energy efficiency, waste management, and green purchasing. Each dimension contained five indicators scored from 1 to 5, covering policy evidence, implementation consistency, monitoring practice, resource-efficiency outcome, and managerial confirmation. A score of 1 indicated very limited evidence, 3 indicated partial implementation, and 5 indicated systematic implementation supported by documents, observation, and interview confirmation. The five indicators in each dimension were summed to produce a 5-25 score, and the four dimensions were summed into a 0-100 green practice index.

The dependent variable was sustainability value. This variable was measured as a composite ratio from 0 to 1 that reflected economic, social, and environmental balance. The economic aspect covered operational efficiency and cost-saving evidence. The social aspect covered stakeholder and community-related performance. The environmental aspect covered energy, waste, and compliance indicators. Each aspect was normalized into a comparable 0-1 scale and averaged to form the sustainability value ratio. This construction follows the logic that ESG-related information connects sustainability performance with corporate outcomes (Chen et al., 2023). It also aligns with research showing that green capabilities and green purchasing can support triple bottom line performance (Khan et al., 2023). Data were collected through three techniques. First, the authors reviewed annual reports and sustainability-related documents of Company X for 2020-2024. Second, the authors observed operational practices related to energy use,

waste control, and green procurement. Third, the authors conducted structured interviews with three key managers from the environmental, finance, and operational divisions to confirm the interpretation of documentary data. The use of several data sources reduced the risk of single-source bias and improved the credibility of the case evidence. Data analysis was conducted in two stages. The first stage used descriptive analysis to explain the trend of green practice scores and sustainability value from 2020 to 2024. The second stage used simple linear regression to test the influence of green practices on sustainability value. The model was specified as:

$$Y = \alpha + \beta X + \varepsilon \quad (1)$$

where Y refers to sustainability value and X refers to the green practice score. The regression test used a significance level of 0.05. Regression was used to estimate the direction and strength of the relationship within a single-case time series, not to claim broad population-level causality. Because the data consisted of five annual observations, the regression result was interpreted as exploratory evidence and was supported by descriptive trend analysis, component scoring, and managerial confirmation.

3. RESULTS AND DISCUSSIONS

Results

The results show that Company X experienced a consistent increase in both green practices and sustainability value during 2020-2024. The trend indicates that the company did not implement environmental initiatives as isolated programs. Instead, the increase occurred across the green practice index and was followed by improvement in the sustainability value ratio. Table 1 presents the annual development of the two variables.

Table 1. Development of Green Practices and Sustainability Value of Company X, 2020-2024

Year	Green Practices Score	Sustainability Value Ratio	Growth of Sustainability Value (%)
2020	52	0.48	-
2021	61	0.55	14.58
2022	68	0.63	14.55
2023	74	0.71	12.70
2024	81	0.79	11.27

Source: Company X annual and sustainability-related reports, processed by authors.

Table 1 shows that the green practice score increased from 52 in 2020 to 81 in 2024. Component review from the scoring sheet indicates that environmental management and waste management contributed the largest improvement. Environmental management increased after the company strengthened environmental procedures, internal monitoring, and documentation. Waste management improved after the company upgraded waste-treatment practices and expanded recycling activities. Energy efficiency also contributed through equipment improvement and operational saving, while green purchasing showed gradual improvement through supplier screening and greener procurement procedures.

The sustainability value ratio also increased from 0.48 in 2020 to 0.79 in 2024. The highest yearly growth occurred during 2021 and 2022. This period coincided with stronger investment in wastewater treatment, energy-efficiency equipment, and organic waste recycling. The trend suggests that environmental initiatives can generate value when they reduce operational waste and improve the company's relationship with stakeholders.

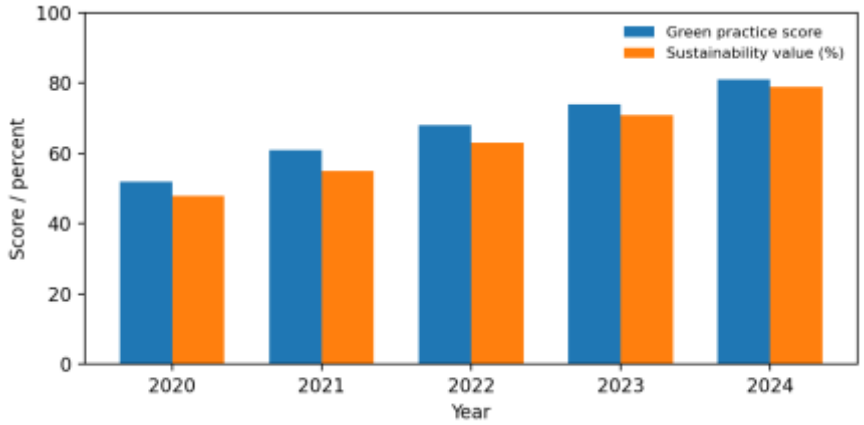

Figure 1. Trend of Green Practices and Sustainability Value, 2020-2024
Source: Data processed by authors.

Figure 1 confirms the parallel movement between the green practice score and sustainability value. The sustainability value is presented in percentage form to make the two indicators easier to compare visually. Both indicators moved upward each year. The visual pattern supports the assumption that stronger green practices are associated with stronger sustainability value in the observed period, although the small dataset requires cautious interpretation.

Simple Linear Regression Analysis

The regression analysis was used to examine whether the green practice score influenced the sustainability value ratio. The regression output is shown in Table 2. The coefficient values were recalculated from the yearly data in Table 1 so that the statistical interpretation remains consistent with the observed data. Because the dataset contains five annual observations from one company, the regression is treated as an exploratory case-based test that complements trend analysis rather than as definitive causal proof.

Table 2. Simple Linear Regression Results

Variable	Coefficient	Std. Error	t-statistic	Sig.
Constant	-0.1010	0.0421	-2.401	0.096
Green Practices	0.0109	0.0006	17.623	< 0.001
R^2	0.990	-	-	-
F-statistic	310.557	-	-	< 0.001

Source: Data processed by authors.

Table 2 shows that green practices had a positive and significant influence on sustainability value. The slope coefficient was 0.0109, which means that every one-point increase in the green practice score was associated with an estimated increase of 0.0109 in the sustainability value ratio. The p-value of the green practice coefficient was below 0.001, which is below 0.05. Therefore, the hypothesis that green practices influence sustainability value is supported in this case.

The R^2 value was 0.990, indicating that the model explained 99.0% of the variation in sustainability value during the observed period. This high value should be interpreted carefully because the data were based on five annual observations from one company. However, the result remains useful as an exploratory signal that the company's green practice development moved closely with its sustainability value improvement.

Discussion

The findings support the view that green practices can become a source of sustainability value when they are implemented as part of business routines. The positive coefficient indicates that environmental management, energy efficiency, waste management, and green purchasing did not stand apart from corporate value creation. These practices helped the company reduce inefficiency and strengthen its

environmental credibility. Awan et al. (2021) identify environmental investment and green process improvement as strategic resources for green innovation. Siedschlag et al. (2022) also show that green investment depends on firm-level conditions that shape environmental improvement.

The component analysis strengthens this interpretation. Environmental management contributed through clearer procedures, monitoring, and documentation, which are important for environmental accounting because they create auditable evidence of environmental responsibility. Waste management contributed through reduced disposal burden and better material recovery. Energy efficiency contributed through lower resource use, while green purchasing contributed by linking supplier decisions with environmental criteria. These components show that sustainability value increases when environmental activities are translated into measurable records, operational savings, and stakeholder-relevant indicators.

The findings also support sustainability management theory. The resource-based view suggests that valuable organizational resources can improve performance when they are difficult to imitate and embedded in routines. In this case, green routines became more valuable when they combined operational control, managerial commitment, and environmental documentation. Hermundsdottir and Aspelund (2021) show that sustainability innovations can strengthen firm competitiveness. Salihi et al. (2024) further explain that environmental governance can support firm value creation through green innovation capacity.

The trend also supports studies on green innovation and corporate performance. Rehman et al. (2021) report that green innovation supports environmental performance in large manufacturing firms. Maldonado et al. (2023) show that green innovation can improve firm performance through sustainability mechanisms in the automotive industry. Le and Govindan (2024) also explain that managerial environmental concern can strengthen the effect of green innovation on corporate performance. Although this study did not separate green product and process innovation, the evidence shows that energy efficiency, waste recycling, and improved environmental management were linked to better sustainability value.

From an environmental accounting perspective, the findings show that green practices need to be recorded as measurable management information. Environmental accounting helps the company identify which green activities generate savings, risk reduction, environmental compliance, or reputation benefits. Senadheera et al. (2021) argue that environmental scoring requires clear indicators because ESG measurement can vary across systems. Liu (2024) shows that green innovation can increase firm value and reduce risk. Therefore, Company X should record green investments, operational savings, waste-reduction benefits, supplier improvements, and stakeholder impacts more systematically in annual sustainability reporting.

The result has managerial meaning for Company X and similar agroindustry firms. The company should treat green practices as measurable management instruments rather than promotional activities. Managers can use the green practice index to monitor whether environmental programs improve over time, while the sustainability value ratio can help evaluate whether those improvements produce economic, social, and environmental benefits. Disclosure quality also matters because sustainability reports can shape how stakeholders evaluate environmental claims and corporate accountability (Alaika & Firmansyah, 2024).

4. CONCLUSION

This study concludes that green practices had a positive and significant influence on the sustainability value of Company X in North Sumatra during 2020-2024. The green practice score increased from 52 to 81, while the sustainability value ratio increased from 0.48 to 0.79. The regression result showed a positive coefficient of 0.0109 and an R^2 value of 0.990. These findings indicate that stronger environmental management, energy efficiency, waste control, and green purchasing were followed by higher corporate sustainability value in the observed period.

The study contributes to environmental accounting and sustainability management by showing how a green practice index can be connected with sustainability value measurement in a firm-level case. For companies, the findings suggest that green practices should be integrated into planning, budgeting, procurement, operational control, and performance evaluation. For managers, the findings indicate the need to set measurable annual targets for energy use, waste reduction, environmental monitoring, and

green procurement. Company X should also publish more transparent sustainability reports so that stakeholders can assess the link between environmental investment and sustainability value.

This study has two main limitations. It used a single-case design and only five years of observation, so the findings should be interpreted as exploratory evidence rather than broad causal generalization. Future researchers should test the model using larger samples, longer observation periods, and panel-data designs. They can also include moderating variables such as company size, environmental investment, industry characteristics, ESG disclosure quality, and stakeholder pressure. Such studies would strengthen the empirical understanding of how green practices create sustainability value in Indonesian companies.

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