

Two Faces of Sustainability and Earnings Quality: A Comparative Profile of Plantation and Processed-Food Firms in Indonesia

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ABSTRACT

The transition toward a green economy has intensified pressure on firms to align earnings quality with sustainability performance, yet subsector differences within food industries remain underexplored. This study profiles and compares earnings management and Environmental, Social, and Governance (ESG) performance among plantation and processed-food firms listed on the Indonesia Stock Exchange during 2018–2025. Using a descriptive-comparative design, the study analyzes 184 firm-year observations from 23 firms selected through multistage sampling. Earnings management is measured using discretionary accruals estimated through Modified Jones and Dividend-Adjusted Modified Jones models, while sustainability performance is assessed using environmental, social, governance, and overall ESG scores. Results indicate that earnings management is largely adaptive, with dividend-adjusted measures showing stronger income-increasing tendencies. Plantation firms demonstrate significantly higher ESG performance than processed-food firms (59.08 versus 47.11; $p = 0.000$), particularly in environmental performance, while processed-food firms show governance-led improvement after 2022. These findings highlight the importance of subsector-specific green financial governance.

Keywords: corporate sustainability performance; discretionary accruals; earnings management; ESG; plantation firms; processed food

JEL Classification: M41; Q56; G34

INTRODUCTION

The paradigm of modern corporate finance has shifted markedly from a short-term profit orientation toward the creation of sustainable long-term value. Within the global green economy, firms are increasingly expected not only to remain profitable but also to safeguard operational continuity through environmental, social, and governance (ESG) performance. This expectation has grown more salient in Indonesia following the strengthening of sustainable-finance regulation and the sustainable development agenda, both of which demand greater transparency and accountability in financial reporting and sustainability disclosure.

Against this backdrop, earnings management remains a persistent concern because managers retain incentives to smooth reported performance to protect their reputations, stabilize cash flows and dividends, or meet market expectations. Agency theory explains that the divergence of interests between managers and shareholders can encourage opportunistic behavior that lowers the quality of reported earnings (Jensen & Meckling, 1976; Healy & Wahlen, 1999). At the same time, mounting sustainability pressure from regulators, investors, and society compels firms to demonstrate credible corporate sustainability performance (Gonçalves & Basso, 2024). Whether these two dimensions reinforce or undermine one another remains empirically contested (Atz et al., 2021; Soeprajitno et al., 2024), and the tension is especially visible in sectors that combine defensive financial characteristics with high sustainability exposure.

The food sector offers a particularly informative setting. It plays a strategic role in national food security while facing intense public scrutiny over raw-material sourcing, waste, land use, and labor welfare. Yet the sector is not homogeneous. Plantation and agribusiness firms operate under commodity-price volatility, export dependence, and certification regimes that expose them directly to environmental controversy, whereas processed-food firms are closer to consumers and more sensitive to brand reputation and demand fluctuations. These contrasting operational profiles suggest that earnings management practices and sustainability attainment may differ substantially between the two subsectors, even though both fall under the broad food industry label.

Most prior studies in Indonesia treat the food sector as a single block or examine earnings management and sustainability performance in isolation, thereby obscuring the internal heterogeneity that distinguishes plantation firms from processed-food producers. Comparative descriptive evidence on how the two subsectors differ in their accrual behavior and in the balance of their environmental, social, and governance attainment is scarce. This scarcity limits regulators' and managers' ability to calibrate sustainability expectations to the specific pressures each subsector faces.

The Indonesian regulatory environment sharpens the relevance of this inquiry. The sustainability framework for the national capital market was established through the Financial Services Authority regulation on the application of sustainable finance for financial-services institutions, issuers, and public companies (Otoritas Jasa Keuangan, 2017), which obliges listed issuers, including those in the food sector, to integrate sustainable-finance principles and to publish an annual sustainability report. This framework was subsequently reinforced by the roadmap toward national sustainability disclosure standards launched by the Institute of Indonesia Chartered Accountants in December 2024, which set the strategic direction for standards aligned with the international sustainability baseline (Ikatan Akuntan

Indonesia, 2024). Together, these instruments form the normative basis for ESG disclosure expectations across sectors, yet compliance capacity and disclosure quality vary considerably among firms. The food sector, which sits at the intersection of national food security and heightened environmental and social scrutiny, is a setting where these expectations meet uneven operational realities, making it an instructive case for examining how sustainability attainment and earnings quality actually manifest at the subsector level.

The macroeconomic context of the observation window adds a further layer of relevance. The 2018–2025 period spans pre-pandemic stability, the pandemic disruption, and the subsequent recovery, during which food firms absorbed shocks to supply chains, input costs, and consumer demand. These conditions plausibly shaped both reporting behavior and the pace of sustainability implementation. Because plantation and processed-food firms face these shocks through different channels, one through commodity-price volatility and export exposure and the other through consumer demand and input-cost pass-through, the window offers a natural opportunity to observe how the two subsectors diverge under a common set of external pressures.

This study addresses the gap by profiling and comparing the characteristics of earnings management and ESG performance in plantation and processed-food firms listed on the Indonesia Stock Exchange over the 2018–2025 period. It pursues three objectives: to describe the pattern of earnings management using both the Modified Jones Model and a dividend-adjusted variant that incorporates dividend distribution into accrual estimation; to characterize the ESG profile of each subsector across the environmental, social, and governance dimensions; and to compare the two subsectors in order to reveal how sustainability and earnings quality diverge within the food industry. The study is deliberately descriptive and comparative; it does not test causal hypotheses, and this focus allows it to map the empirical terrain that more explanatory work can subsequently build upon. Its contribution lies in offering subsector-sensitive evidence that reframes food-sector sustainability as a contingent rather than uniform phenomenon, providing a practical basis for green financial governance that is attuned to the distinct realities of plantation and processed-food firms. By foregrounding the internal heterogeneity of the food sector, the study also responds to a broader methodological caution in the literature: that aggregate sectoral analysis can average away precisely the differences that matter most for policy and practice.

LITERATURE REVIEW

Earnings Management and Discretionary Accruals

Earnings management refers to the exercise of managerial discretion over financial reporting in order to influence reported outcomes (Healy & Wahlen, 1999). The discretionary-accrual approach, rooted in the Jones Model and its modified form, isolates the abnormal portion of accruals that is attributable to managerial choice rather than to normal operating activity (Jones, 1991; Dechow et al., 1995). Positive discretionary accruals signal an income-increasing tendency, while negative discretionary accruals indicate an income-decreasing tendency. The literature has long recognized that accrual-based measures capture the intersection of managerial incentives, cash-flow pressure, and reporting strategy, and that their interpretation depends on the economic context in which firms operate (Al-Shattarat et al., 2022). Studies in the Indonesian setting similarly show that leverage and other financial pressures shape real and accrual-based earnings management (Gunawan & Prasetyo, 2025).

Refinements to the modified model continue to appear because standard specifications may omit firm-specific cash commitments that shape accrual behavior. Dividend distribution is one such commitment. Firms that maintain stable dividends face pressure to reconcile cash outflows with reported profitability, and embedding dividend information into accrual estimation can alter a firm-year's classification from income-decreasing to income-increasing. Comparing a conventional modified model with a dividend-adjusted variant therefore provides a richer descriptive lens on how reporting strategy responds to distribution pressure, particularly in a defensive sector where dividend consistency carries signaling value.

The distinction between opportunistic and adaptive earnings management is central to interpreting accrual patterns. Under an opportunistic reading, discretionary accruals reflect managers extracting private benefit at the expense of reporting quality. In an adaptive reading, the same accruals represent responses to legitimate pressures, such as the need to preserve dividend stability, sustain investor confidence, or absorb transitory shocks (Velte, 2023). The two readings are not mutually exclusive, and the balance between them is likely to vary with industry structure and macroeconomic conditions (Bachtijeva et al., 2024; Hajji & Bacha, 2025). In defensive sectors where investors prize consistent returns, the adaptive motive may loom especially large, because the reputational cost of a dividend cut or an earnings surprise can exceed the benefit of a single period's conservative reporting. Descriptive evidence that tracks how accrual classifications shift under alternative measures can help disentangle these motives by revealing whether income-increasing behavior clusters in years of dividend maintenance or in years of opportunistic upside.

Corporate Sustainability Performance and the ESG Dimensions

Corporate sustainability performance is commonly operationalized through the environmental, social, and governance dimensions, which together reflect a firm's risk management and responsiveness to stakeholder expectations. The environmental dimension assesses resource use, emissions, certified sourcing, land footprint, and food loss; the social dimension examines relations with workers, communities, and consumers; and the governance dimension evaluates board independence, transparency, and control quality (Gerged, 2021). Legitimacy theory holds that firms facing greater social exposure disclose and perform more extensively in order to preserve their license to operate (Suchman, 1995; Gonçalves & Basso, 2024), while signaling theory frames sustainability attainment as a credible signal of managerial integrity (Spence, 1973).

Empirical evidence on the relationship between sustainability and earnings quality remains mixed. Some studies find that stronger sustainability performance disciplines manipulative reporting, consistent with an ethical-discipline view (Liu & Lin, 2022; Cao et al., 2023), whereas others show that sustainability reputation can function as moral licensing or greenwashing that opens new avenues for opportunistic behavior (Soeprajitno et al., 2024; Anderson et al., 2024). Evidence from listed firms further indicates that discretionary accruals can weaken the market value of ESG performance, suggesting that perceived earnings manipulation undermines the credibility of sustainability disclosure (Manansala & Mallorca, 2025). This divergence suggests that the interaction between sustainability and earnings management is highly context-dependent, and that industry structure may condition which tendency prevails (Chen & Zhang, 2024).

A recurring theme in this literature is the asymmetry among the three ESG dimensions. Governance improvements often respond to formal compliance and disclosure requirements and can therefore be instituted comparatively quickly, whereas environmental and social outcomes depend on operational change that is slower and harder to sustain. As a result, firms under sustainability pressure may register early gains in governance while environmental and social attainment lags, producing an aggregate ESG score that masks uneven underlying progress. This asymmetry is particularly relevant to the food sector, where environmental exposure is concentrated in upstream agribusiness, while social exposure spans labor and community relations along the value chain. Disaggregating the ESG score into its dimensions is therefore essential for an accurate profile, because the composite figure can conceal precisely the differences that distinguish one subsector from another.

Subsector Heterogeneity in the Food Industry

The food industry encompasses distinct subsectors whose sustainability exposure and financial pressures differ. Plantation and agribusiness firms, dominated by palm-oil operations, face concentrated environmental scrutiny, export-market certification demands, and pronounced commodity-price cycles (Ali et al., 2024). These pressures tend to elevate both their environmental disclosure and the volatility of their reported earnings, and evidence from the agro-industrial sector indicates that financial performance and environmental sensitivity jointly shape the extent of ESG disclosure (Apriono et al., 2023). Processed-food firms, by contrast, operate closer to final consumers and are more exposed to brand reputation, input-cost pass-through, and shifting demand, which shapes a different profile of governance emphasis and accrual behavior (Li et al., 2025; Nugroho & Agustono, 2025). Macroeconomic conditions such as inflation and interest-rate movements further condition both reporting behavior and sustainability investment across these subsectors (Cho & Patil, 2025; Abdulkadir & Milala, 2025). Recognizing this heterogeneity is essential because pooling the two subsectors can mask offsetting patterns and produce an incomplete picture of sustainability and earnings quality in the food sector (Aguilera-Caracuel & Guerrero-Villegas, 2025).

Building on these strands, the present study synthesizes the accrual and sustainability literatures within a comparative frame. Rather than testing directional hypotheses, it characterizes and contrasts the two subsectors, treating the comparison itself as the analytical contribution. This descriptive orientation complements explanatory work by clarifying the empirical patterns that any causal account of green financial governance in the food sector must ultimately explain.

Conceptual Framework

This study employs a descriptive-comparative conceptual framework to examine how earnings management and Environmental, Social, and Governance (ESG) performance differ between plantation and food-crop firms and processed-food firms listed on the Indonesia Stock Exchange. The framework begins by classifying food-sector firms into two subsectors, then profiling each subsector through two analytical dimensions: earnings management, measured using the Modified Jones Model and the Dividend-Adjusted Modified Jones Model to identify income-increasing and income-decreasing discretionary accruals; and ESG performance, assessed through environmental, social, governance, and overall ESG scores. These profiles are then compared to identify subsector-contingent patterns in earnings quality and sustainability performance. Because the study is descriptive rather than causal, the framework does not propose hypotheses but instead maps how

different operational pressures, such as commodity volatility, certification requirements, dividend commitments, consumer demand, and governance expectations, shape the distinctive financial reporting and sustainability characteristics of each subsector. The resulting comparison provides a basis for formulating green financial governance implications that are more sensitive to the specific realities of plantation and processed-food firms.

Figure 1. Analysis Framework For Food-Sector Firms

Source: Developed by the Authors (2026)



RESEARCH METHOD

This study employs a quantitative descriptive-comparative design. Its purpose is to profile and contrast the characteristics of earnings management and sustainability performance across two food subsectors rather than to estimate causal effects. Accordingly, the analysis relies on descriptive statistics, classification of accrual behavior by category, and cross-sector comparisons, without recourse to inferential hypothesis testing. This design is appropriate because the research questions concern the shape and distribution of practices within and between subsectors.

The population comprises food-sector firms listed on the Indonesia Stock Exchange over the 2018–2025 period, understood substantively as firms operating along the food value chain from agribusiness and plantations through raw-material processing to manufactured food and beverages. Under the IDX Industrial Classification, these firms fall largely within the Consumer Non-Cyclicals sector. The sample was drawn through multistage sampling combining clustering and purposive selection. The first stage established natural clusters corresponding to the processed-food subsector and the plantation and food-crop subsector, and the second stage applied purposive criteria requiring continuous listing, availability of complete financial statements, and disclosure of the data needed to compute accrual and sustainability measures across the observation window. The procedure yielded twenty-three firms, comprising twelve processed-food firms and eleven plantation and food-crop firms.

Two data domains were assembled. Earnings management was measured through discretionary accruals estimated using the Modified Jones Model and the Dividend-Adjusted Modified Jones Model, which incorporates dividend distribution into accrual estimation. Positive discretionary accruals were classified as income-increasing, while negative discretionary accruals were classified as income-decreasing, allowing comparison of whether dividend adjustment altered earnings-management classification. Sustainability performance was measured using Environmental, Social, and Governance (ESG) scores derived from audited annual reports and sustainability reports. The environmental dimension covered resource use, emissions, certified sourcing, land footprint, and food loss and waste; the social dimension covered labor practices, community relations, and consumer responsibility; and the governance dimension covered board independence, transparency,

and control quality. ESG indicators were assessed through a structured content-based scoring procedure, standardized into a 0–100 scale, and aggregated into an overall ESG score using equal weights across the three dimensions. All financial, dividend, and ESG-related data were compiled for the 2018–2025 observation window and organized as firm-year observations.

Earnings management was measured using discretionary accruals estimated through the Modified Jones Model and the Dividend-Adjusted Modified Jones Model. The Modified Jones Model separates total accruals into normal and discretionary components using the following specification: $TAC_{it}/A_{it-1} = \alpha_1(1/A_{it-1}) + \alpha_2[(\Delta REV_{it} - \Delta REC_{it})/A_{it-1}] + \alpha_3(PPE_{it}/A_{it-1}) + \varepsilon_{it}$, where TAC represents total accruals, A_{it-1} represents lagged total assets, ΔREV represents changes in revenue, ΔREC represents changes in receivables, PPE represents property, plant, and equipment, and ε represents discretionary accruals. Positive discretionary accruals indicate income-increasing earnings management, whereas negative values indicate income-decreasing earnings management. To account for dividend-related reporting pressure, this study also applies a Dividend-Adjusted Modified Jones Model, specified as $(TAC_{it} - DIV_{it})/A_{it-1} = \alpha_1(1/A_{it-1}) + \alpha_2[(\Delta REV_{it} - \Delta REC_{it})/A_{it-1}] + \alpha_3(PPE_{it}/A_{it-1}) + \varepsilon_{it}$, where DIV_{it} denotes dividend distribution. Comparing both models enables the study to assess whether dividend commitments alter the classification and interpretation of accrual-based earnings management.

Because the study is comparative, particular attention was paid to ensuring that the two subsectors were profiled on the same measures and over the same window, so that observed differences reflect subsector characteristics rather than measurement inconsistency. Where disclosure practices varied across firms, the profiling emphasized the direction and consistency of attainment on each dimension rather than fine-grained point differences, which is appropriate for a descriptive design whose aim is to characterize patterns rather than to estimate precise effect sizes. This approach preserves comparability while acknowledging the inherent variation in corporate sustainability reporting.

Analysis proceeded in three steps. First, discretionary-accrual values were tabulated by firm and year under both measures and summarized into income-increasing and income-decreasing categories; two firms are presented individually as illustrations, selected because they exemplify the two characteristic patterns in the sample, namely a dividend-paying plantation firm whose classification shifts under dividend adjustment and a processed-food firm whose accruals track a restructuring episode. Second, ESG dimension profiles were summarized for each subsector and tracked across the observation period. Third, the two subsectors were compared on both the accrual and the sustainability profiles, and the comparison was supported by Mann–Whitney U tests of the difference in distribution between subsectors, a non-parametric test appropriate given the presence of outliers and non-normality. Throughout, decimal figures are represented with a full stop and thousands with a comma, consistent with the reporting convention adopted in the study.

Two features of the data warrant disclosure. First, the discretionary-accrual measure used in the aggregate comparison is affected by two extreme firm-years for a single distressed firm; medians and a winsorized mean are therefore reported alongside the mean to ensure that the comparison is not driven by these observations. Second, where firm-level sustainability disclosure was unavailable for particular years, ESG dimension scores were carried forward from the most recent disclosed value, which produces short runs of identical scores for several firms; this convention is standard in sustainability-profiling studies but is

noted here because it bears on the interpretation of within-firm stability over time. Neither feature affects the direction of the subsector comparisons, which are confirmed by the non-parametric tests.

RESULTS

Sample Composition

The final sample of twenty-three firms is distributed across the two food subsectors as summarized in Table 1. The processed-food subsector accounts for twelve firms and the plantation and food-crop subsector for eleven, providing a balanced basis for comparison.

Table 1. Sample Composition by Food Subsector

Code	Representative Firms	Number of Firms
D222	Processed-food firms (e.g., ICBP, INDF, MYOR, ROTI, CEKA, STTP)	12
D232	Plantation and food-crop firms (e.g., AALI, LSIP, SIMP, SSMS, DSNG, ANJT)	11
Total		23

Note. D222 = processed-food subsector; D232 = plantation and food-crop subsector, following the IDX Industrial Classification.

Source: Processed Data (2026)

As shown in Table 1, the two subsectors are represented in comparable numbers, which supports a meaningful contrast of their earnings-management and sustainability profiles without one group dominating the aggregate picture.

Earnings Management Profile Under Two Measures

The discretionary-accrual analysis reveals a fluctuating pattern of earnings management across the observation window. Under the Modified Jones Model, many firm-years fall into the income-decreasing category, whereas the Dividend-Adjusted Modified Jones Model shifts a substantial number of those same firm-years into the income-increasing category. This shift is most visible in firms with a consistent dividend record, where incorporating dividend distribution into accrual estimation exposes an income-increasing tendency that the conventional measure conceals. Table 2 illustrates the pattern for a representative plantation firm.

Table 2. Illustrative Discretionary Accruals under Two Measures (Representative Plantation Firm)

Year	DA (MJM)	Category (MJM)	DA (DA-MJM)	Category (DA-MJM)
2018	-0.0021	Decreasing	0.0904	Increasing
2019	-0.0318	Decreasing	0.0040	Increasing
2020	-0.0437	Decreasing	-0.0015	Decreasing
2021	-0.0828	Decreasing	-0.0006	Decreasing
2022	0.0094	Increasing	0.0380	Increasing

2023	-0.0373	Decreasing	0.0016	Increasing
2024	-0.0623	Decreasing	-0.0065	Decreasing
2025	-0.0768	Decreasing	0.0004	Increasing

Note. MJM = Modified Jones Model; DA-MJM = Dividend-Adjusted Modified Jones Model; DA = discretionary accruals.

Source: Processed Data (2026) According to the data in Table 2, four firm-years that are classified as income-decreasing under the Modified Jones Model, namely 2018, 2019, 2023, and 2025, are reclassified as income-increasing once dividend distribution is incorporated. This reclassification indicates that the firm sustained an income-increasing posture in years when it maintained its dividend commitment, a posture that the conventional measure did not detect. In the remaining years, the two measures agree, suggesting that in periods of acute operational or industry pressure the income-decreasing tendency dominates regardless of dividend adjustment.

Extending this observation across the sample, the dividend-adjusted measure produces a stronger income-increasing tendency than the conventional model, and this tendency intensified in the post-pandemic recovery years. The pattern is consistent with an interpretation of earnings management in the food sector as adaptive rather than purely opportunistic: firms appear to manage accruals in order to preserve dividend stability and market perception, especially given the defensive reputation of the sector, rather than solely to inflate short-term profit.

The processed-food subsector displays a related but distinct pattern, in which reporting behavior often tracks episodes of restructuring and reputation recovery. Table 3 illustrates the accrual profile of a representative processed-food firm that experienced a governance crisis early in the window.

Table 3. Illustrative Discretionary Accruals under Two Measures (Representative Processed-Food Firm)

Year	DA (MJM)	Category (MJM)	DA (DA-MJM)	Category (DA-MJM)
2018	-0.1896	Decreasing	-0.1177	Decreasing
2019	0.6456	Increasing	0.7997	Increasing
2020	0.6975	Increasing	0.8141	Increasing
2021	0.0701	Increasing	0.2042	Increasing
2022	0.0156	Increasing	0.1623	Increasing
2023	-0.0094	Decreasing	0.1165	Increasing

Note. MJM = Modified Jones Model; DA-MJM = Dividend-Adjusted Modified Jones Model; DA = discretionary accruals.

Source: *Processed Data (2026)*

Table 3 shows a firm that reported income-decreasing accruals in 2018 amid financial and governance difficulties, then shifted to a pronounced income-increasing posture from 2019 through 2022 during a period of restructuring and reputation recovery. The elevated accrual values in this phase are consistent with an effort to signal improving conditions to creditors, investors, and the capital market. The later moderation in 2023 reflects renewed operational pressure from input-cost and competitive dynamics in the national food-manufacturing industry. Notably, the dividend-adjusted measure again reclassifies a later income-decreasing firm-year as income-increasing, reinforcing the sample-wide finding that incorporating dividend distribution exposes an income-increasing tendency that the conventional model understates. Taken together, the two illustrations show that while both subsectors exhibit the reclassification effect, the plantation case is driven more by commodity-linked volatility and dividend maintenance, whereas the processed-food case is shaped more by episodic restructuring and reputation management.

Aggregating across the full sample of one hundred eighty-four firm-years places these illustrations in context. Table 4 summarizes the distribution of discretionary accruals, estimated with the Dividend-Adjusted Modified Jones Model, and the balance of income-increasing and income-decreasing firm-years by subsector.

Table 4. Distribution of Discretionary Accruals (Dividend-Adjusted Modified Jones Model) by Food Subsector, 2018–2025

Subsector	Mean DA	Median DA	Income-Increasing	Income-Decreasing
Plantation and food-crop	0.0592	0.0379	61	27
Processed food	-0.0471	0.0641	69	27
Full sample	0.0037	0.0485	130	54

Note. DA = discretionary accruals estimated with the Dividend-Adjusted Modified Jones Model. Counts denote firm-years. The processed-food mean is distorted by two extreme firm-years for a single firm (SKBM, 2022 and 2023); the median is reported alongside the mean for this reason.

Source: *Processed Data (2026)*

Table 4 indicates that income-increasing firm-years outnumber income-decreasing ones in both subsectors, and across the full sample, income-increasing behavior appears in one hundred thirty of one hundred eighty-four firm-years. The processed-food mean discretionary accrual is negative, but this figure is distorted by two extreme observations for a single distressed firm (SKBM in 2022 and 2023). The median, which is robust to such outliers, is positive for both subsectors and is in fact slightly higher for processed-food firms (0.0641 against 0.0379), while a two-percent winsorization yields positive means for both groups. Read together, the positive medians are the more reliable indicator of central tendency here, confirming that both subsectors lean toward income-increasing accruals despite the negative processed-food mean. The dispersion nonetheless remains larger among processed-food firms, reflecting the influence of distress and restructuring episodes. A Mann–Whitney test finds the subsector difference in discretionary accruals to be marginal ($p = 0.099$), indicating that the two subsectors do not differ sharply in central accrual tendency once outliers are accounted for. The predominance of income-increasing firm-

years across the sample is consistent with the adaptive interpretation, in which firms lean toward sustaining reported profitability to preserve dividend stability and market confidence.

Sustainability Performance Profile by Subsector

The ESG profile differs systematically between the two subsectors. Table 5 reports the mean attainment on each ESG dimension, computed across all firm-years within each subsector over the observation window and expressed on a 0–100 scale.

Table 5. Mean ESG Dimension Scores by Food Subsector, 2018–2025

ESG Dimension	Plantation and Food-Crop Firms	Processed-Food Firms
Environmental	55.14	45.78
Social	54.51	42.75
Governance	67.60	52.79
Overall ESG score	59.08	47.11

Note. ESG = Environmental, Social, and Governance. Scores are subsector means across all firm-years, scaled 0–100.

Source: Processed Data (2026)

Table 5 shows that plantation firms attain higher mean scores than processed-food firms on every ESG dimension and on the overall score (59.08 against 47.11). The gap is widest on the environmental dimension, where plantation firms average 55.14 against 45.78 for processed-food firms, and it is also pronounced on governance (67.60 against 52.79). Mann–Whitney tests confirm that these subsector differences are statistically significant for the overall ESG score ($p = 0.000$), governance ($p = 0.001$), social ($p = 0.001$), and environmental ($p = 0.012$) dimensions, so the plantation advantage is not an artifact of a few firms but a systematic pattern. This pattern reflects the certification demands and export-market scrutiny that characterize palm-oil operations, which externally compel more extensive environmental disclosure and practice. Governance is the strongest dimension for both subsectors, consistent with the relative ease of instituting board-oversight and transparency improvements compared with the operational change required for environmental and social gains.

The trajectory of the overall ESG score reinforces this reading. Both subsectors improved after 2022: the plantation mean rose from about 51.0 in 2021 to 63.8 in 2022 and 71.6 in 2023, while the processed-food mean rose from about 38.7 in 2021 to 48.3 in 2022 and 53.5 in 2023, before both stabilized through 2025. The post-2022 lift indicates a strengthening of sustainability attention across the food sector, with plantation firms maintaining a persistent lead throughout the window. These figures corroborate the qualitative comparative profile summarized in Table 6.

Table 6. Comparative ESG Characteristics by Food Subsector

Dimension	Plantation and Food-Crop Firms	Processed-Food Firms
Environmental	Higher attainment; driven by certification regimes and export-market scrutiny of	Lower and more variable; disclosure less externally

	palm-oil operations	compelled
Social	Moderate; community and labor exposure prominent but unevenly disclosed	Moderate; consumer and workforce focus, inconsistent over time
Governance	Strongest dimension; regulatory pressure reinforces board oversight	Rising after 2022; the strongest area of improvement for this group
Overall trend	Persistently higher ESG scores; marked lift after 2022	Gradual improvement, governance-led, after 2022

Note. ESG = Environmental, Social, and Governance.

Source: Processed Data (2026)

Table 6 synthesizes the comparative characteristics. Across both subsectors, the environmental and social dimensions remain the more challenging areas, as firms struggle to sustain consistent disclosure and implementation over time, whereas governance is the more readily strengthened dimension. Taken together with the quantitative means in Table 5, the profile confirms that plantation firms combine higher environmental attainment with a persistent overall ESG lead, while processed-food firms improve more gradually through governance-led progress.

Macroeconomic Context of the Observation Window

The reporting and sustainability patterns unfolded against a fluctuating macroeconomic backdrop. Across the observation window, the effective tax position of food-sector firms was volatile and frequently negative on average, reflecting fiscal-loss compensation, deferred taxes, and gaps between commercial and fiscal income rather than an absence of tax obligation. The trajectory weakened during the pandemic years as supply-chain disruption, higher logistics costs, and mobility restrictions pressured performance, then improved during the recovery before tightening again amid higher input, energy, and financing costs. These swings illustrate the operational environment in which accrual decisions were made and help explain why income-decreasing behavior dominated in years of acute pressure while income-increasing behavior strengthened during recovery. The macroeconomic reading thus contextualizes the accrual profile without implying any tested causal link, consistent with the descriptive orientation of the study.

The two subsectors absorbed these conditions through different channels. Plantation firms were exposed primarily through commodity-price cycles and export demand, so that periods of rising palm-oil prices coincided with income-increasing behavior while downturns reinforced income-decreasing adjustment. Processed-food firms were exposed primarily through consumer demand and input-cost pass-through, so that their accrual behavior tracked restructuring episodes and reputation management more closely than commodity cycles. This channel-level distinction underlies the divergence documented in the firm-level illustrations and reinforces the case for reading the two subsectors separately

Comparative Synthesis

Read together, the profiles indicate that earnings quality and sustainability attainment are subsector-contingent within the food industry. Plantation firms combine externally driven environmental strength with pronounced accrual volatility linked to commodity cycles, whereas processed-food firms combine governance-led sustainability improvement with

accrual behavior oriented toward dividend and reputation stability. Neither subsector can be adequately characterized by an ESG score alone, because that score conceals the underlying interplay between reporting strategy and sustainability posture that distinguishes the two groups. The comparison also shows that the dividend-adjustment effect is common to both subsectors even though its drivers differ, which suggests that dividend commitments exert a pervasive influence on reported earnings across the food sector regardless of the specific operational pressures each subsector faces. This combination of a shared reporting mechanism and divergent sustainability profiles is the central empirical pattern that the study contributes.

DISCUSSION

Adaptive Rather Than Opportunistic Earnings Management

The comparison of the two accrual measures suggests that earnings management in the food sector is better understood as adaptive than as narrowly opportunistic. When the conventional Modified Jones Model classifies a firm-year as income-decreasing, but the dividend-adjusted measure reclassifies it as income-increasing, the divergence points to a firm that sustained reported profitability in order to honor its dividend commitment. In a sector widely regarded as defensive, investors expect stable returns even under adverse conditions, and managers therefore have an incentive to keep discretionary accruals positive once the cash demands of dividend distribution are considered. From the perspective of signaling theory, the stability of earnings and dividends conveys information about a firm's health and prospects, which gives management a reason to preserve consistency in reported performance. The dividend-adjusted profile thus offers a more contextual portrait of reporting behavior than the conventional measure, because it links distribution pressure, earnings stability, and reporting strategy within a single view.

This interpretation aligns with the observation that the income-increasing tendency strengthened during the post-pandemic recovery, when firms sought to restore market confidence and stabilize investor perception rather than merely to raise short-term profit. The persistence of agreement between the two measures in years of acute pressure further indicates that when industry conditions deteriorate sharply, the income-decreasing tendency prevails irrespective of dividend adjustment, reflecting the weight of operating shocks over reputational considerations in those periods

Subsector Divergence in Sustainability Attainment

The sustainability profiles reveal a clear divergence between the two subsectors. Plantation firms attain higher ESG scores, and their environmental strength is the most distinctive feature of their profile. This pattern is consistent with legitimacy theory: palm-oil operations face concentrated environmental scrutiny and certification requirements, and firms respond by disclosing and performing more extensively on the environmental dimension in order to preserve their social license to operate. Processed-food firms, being closer to consumers and less exposed to certification regimes, improve more gradually and concentrate that improvement in the governance dimension, where the strengthening of transparency and board oversight after 2022 marks their most notable progress.

The persistence of the environmental and social dimensions as the more challenging areas across both subsectors indicates that sustainability implementation in the food sector remains uneven. Governance improvements are comparatively easier to institute because they respond to formal compliance and disclosure requirements, whereas environmental

and social outcomes depend on operational change that is harder to sustain consistently. This asymmetry helps explain why an ESG score, which aggregates the three dimensions, can obscure important differences in where and how firms actually improve.

The environmental gap is especially consequential for the food sector. For plantation firms, environmental attainment is bound up with land use, certified sourcing, and emissions associated with palm-oil production, areas in which external certification and export-market scrutiny provide strong incentives for disclosure and practice. For processed-food firms, environmental exposure is more diffuse, spanning packaging, energy use, and supply-chain sourcing, and the weaker external compulsion may explain why their environmental progress lags their governance progress. The social dimension, meanwhile, spans labor conditions, community relations, and consumer welfare across both subsectors, and its uneven disclosure suggests that firms find social outcomes harder to measure and communicate consistently than governance structures. Recognizing these dimension-specific dynamics is important for interpreting the comparative profiles, because it locates the divergence between the subsectors in concrete operational realities rather than in an abstract difference of sustainability commitment.

Positioning Relative to Prior Studies

The comparative evidence both extends and qualifies earlier work. Studies that report a disciplining effect of sustainability on earnings management typically treat firms as a homogeneous group (Liu & Lin, 2022), whereas the present profiles suggest that any such effect is likely to be uneven across food subsectors because the two groups differ in both their sustainability drivers and their accrual behavior. Conversely, accounts that emphasize moral licensing or greenwashing find partial resonance here (Soeprajitno et al., 2024), since plantation firms with strong externally compelled environmental disclosure nonetheless exhibit substantial accrual volatility. The findings therefore caution against reading a single directional relationship into the food sector as a whole. They also complement the strand of literature that highlights the salience of governance mechanisms (Li et al., 2025; Stefanelli & Storani, 2025), in that the governance-led improvement observed among processed-food firms echoes evidence that board oversight is often the first dimension to strengthen under sustainability pressure. By disaggregating the sector, the study clarifies why prior results have been mixed: pooled analyses average across subsectors whose patterns partly offset one another.

The adaptive interpretation of earnings management advanced here aligns with research that frames accrual choices as responses to legitimate pressures rather than as unambiguous evidence of opportunism (Velte, 2023; Yahaya, 2024). The reclassification of income-decreasing firm-years into income-increasing ones under the dividend-adjusted measure is particularly informative, because it shows that a portion of what a conventional model reads as conservative reporting is better understood as the maintenance of a stable earnings and dividend signal. This nuance matters for how sustainability and earnings quality are jointly assessed, since a firm that manages accruals to preserve dividend stability is not necessarily the same as one that manages accruals to disguise deteriorating fundamentals. Related work on tax burden, debt covenants, and financial constraints similarly shows that reporting choices respond to concrete financial pressures rather than to a single opportunistic motive (Delgado & Fernández-Rodríguez, 2023; Dyreng et al., 2022; Li et al., 2023; Nalarreason & Prameswari, 2025).

Implications for Green Financial Governance

Taken together, the findings imply that green financial governance in the food sector should be calibrated to subsector realities rather than applied uniformly. For plantation firms, whose environmental disclosure is externally compelled and whose earnings are commodity-sensitive, governance mechanisms should focus on the credibility and consistency of environmental practice and on monitoring accrual behavior across commodity cycles. For processed-food firms, whose improvement is governance-led and whose accruals track dividend and reputation stability, oversight should reinforce the environmental and social dimensions that lag behind and should attend to the reporting incentives created by dividend commitments. In both cases, the analysis cautions against reading sustainability solely from aggregate ESG scores, because the score conceals the interplay between reporting strategy and sustainability posture that distinguishes the two subsectors. Recognizing this interplay allows regulators and managers to design expectations that reflect the distinct pressures each subsector faces, strengthening the integration of financial reporting and sustainability in a way that is sensitive to industry structure.

CONCLUSION

This study set out to profile and compare the characteristics of earnings management and sustainability performance in plantation and processed-food firms listed on the Indonesia Stock Exchange over 2018–2025. The descriptive-comparative analysis shows that earnings management in the food sector is adaptive rather than purely opportunistic, and that a dividend-adjusted accrual measure exposes an income-increasing tendency that the conventional Modified Jones Model conceals, particularly among firms that maintain consistent dividends. On the sustainability side, plantation firms attain significantly higher ESG performance than processed-food firms, especially on the environmental dimension, whereas processed-food firms improve more gradually through governance-led progress after 2022. The subsector differences in sustainability are statistically significant, while the difference in central accrual tendency is marginal once outliers are accounted for. The central conclusion is that earnings quality and sustainability in the food sector are subsector-contingent and cannot be inferred from ESG scores alone.

The study contributes subsector-sensitive descriptive evidence that reframes food-sector sustainability as a heterogeneous rather than uniform phenomenon, and it offers a practical foundation for green financial governance that is attuned to the distinct operational pressures of plantation and processed-food firms. For managers, the findings suggest that sustainability strategy and earnings-reporting practice should be aligned with the specific exposures of each subsector. For regulators, they suggest that sustainability expectations and disclosure standards should be differentiated across food subsectors rather than applied as a single template. Future research can extend this descriptive mapping by examining, through explanatory designs, the mechanisms that link dividend policy, accrual behavior, and sustainability attainment within each subsector, and by broadening the observation window and firm coverage to strengthen the generalizability of the comparative patterns identified here.

LIMITATION

This study is descriptive and comparative in nature and therefore does not test causal relationships among earnings management, sustainability performance, and their determinants; the difference tests reported here establish that subsectors differ but do not identify the mechanisms behind those differences. The sample is confined to two food

subsectors on a single national exchange over a defined window, which bounds the generalizability of the profiles to other sectors and markets. The sustainability characterization relies on ESG dimension information compiled from corporate reports, whose comparability can be affected by differences in disclosure practice across firms, and where annual disclosure was unavailable the most recent value was carried forward, producing short runs of identical scores for several firms. The discretionary-accrual comparison is affected by two extreme firm-years for a single distressed firm, which the study addresses by reporting medians and a winsorized mean alongside the mean. These limitations define the interpretive scope of the findings and mark the boundaries within which the comparative conclusions should be read.

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DECLARATION OF CONFLICTING INTERESTS

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