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Harvest Volume or Extraction Efficiency? The Value Relevance of Fresh Fruit Bunch Yield and Oil Extraction Rate to the Stock Prices of Indonesian Palm Oil Plantation Companies Amid the Productivity Crisis

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ABSTRACT

The Indonesian palm oil industry faces a structural upstream productivity crisis: more than half of the national estate area is low-yielding due to ageing palms, smallholder replanting persistently falls far short of targets, harvesting labour is increasingly scarce, and deteriorating fresh fruit bunch quality depresses extraction rates. This study examines whether the capital market directly prices agronomic excellence by positioning harvest productivity (FFB yield) and extraction efficiency (oil extraction rate/OER) as predictors of plantation issuers' stock prices. A balanced panel of ten issuers listed on the Indonesia Stock Exchange over 2023 to the first quarter of 2026 (40 observations) is analysed using fixed-effect panel regression with clustered standard errors. The estimates show that FFB yield has a positive and significant effect on stock prices ($\beta = 0.194$; $p = 0.004$), with one additional tonne of fresh fruit bunches per hectare associated with a price appreciation of approximately 21.4 percent. Conversely, OER is insignificant in the joint model despite being significantly positive when estimated separately; a decomposition analysis indicates that the information content of OER largely overlaps with FFB yield, so the unique component of extraction efficiency earns no incremental valuation reward. These findings extend the value-relevance literature on non-financial information to agronomic metrics and imply that, in investors' perception, harvest volume productivity is the primary signal of estate excellence, while the extraction rate operates as accompanying information already subsumed within it.

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INTRODUCTION

Behind its status as the world's largest palm oil producer, the Indonesian palm oil industry is actually facing a structural upstream productivity crisis. Out of the 16.8 million hectares of national oil palm plantations in 2025, more than half have low productivity due to the aging of the plants, threatening national production stagnation if the replanting rate is not accelerated (Elaeis.co, 2026b). In the smallholder plantation segment, which controls about 41 percent of the national area, approximately 4.8 million hectares need replanting, and 2.4 million hectares of this have exceeded the productive age of twenty-five years (Elaeis.co, 2026a; Kompas.id, 2026). Ironically, the main policy instrument to address this issue has been sluggish: the realization of the People's Palm Oil Rejuvenation Program from 2021 to 2025 only reached around 17,700 to 53,600 hectares per year, far below the target of 120,000 to 180,000 hectares, prompting the government to lower the target to around 50,000 hectares per year to make it more realistic (IPOSS, 2025; Elaeis.co, 2026b; Kompas.id, 2026). The productivity of smallholder plantations, which remains around three tons of palm oil per hectare, far below the realistic target of five tons, is estimated to cause Indonesia to lose additional gross domestic product potential of up to Rp70.3 trillion (Elaeis.co, 2026a; Kompas.id, 2026).

The productivity crisis does not stop at the issue of plant age, but rather extends to the two most critical operational nodes that determine product quality: harvesting difficulties and fruit quality degradation. Harvesters are the frontline of plantation operations, but this profession is increasingly being abandoned as education levels rise and alternative job opportunities open up, leading to a projected serious threat of labor shortages that forces the industry to turn to mechanization (Haisawit.co.id, 2026). The shortage of harvesters extends the harvest rotation and increases the proportion of overripe fruit, unharvested leftover fruit, and leftover bunches; meanwhile, the harvesting of unripe fruit and delays in transporting to the factory raise the free fatty acid content, which lowers the quality of crude palm oil and reduces extraction yield (Corley & Tinker, 2016; Politeknik Citra Widya Edukasi, 2025). Thus, the issue of the quantity of harvest per hectare and the issue of the quality of the goods, which ultimately affects the yield, intertwine into a single package of operational risks faced by every plantation business actor, from smallholders to giant issuers on the stock exchange.

What makes this configuration academically interesting is the contrast between the upstream gloom and the aggregate splendor. At the same time as the productivity issue worsened, the industry recorded crude palm oil production of 51.66 million tons and export value of US$35.87 billion in 2025, the highest in history (GAPKI, 2026), with growth more supported by selling prices and planted area rather than leaps in productivity per hectare. Palm oil plantation issuers on the Indonesia Stock Exchange occupy a unique position in this landscape: they are the national productivity frontliners with yields of 17.5 to 24.2 tons of fresh fruit bunches per hectare in this research sample, far exceeding the typical smallholder farms, yet still showing substantial variations over time and among issuers. It is this variation that raises the research question:

does the capital market directly recognize and value agronomic superiority? Are more productive plantations and more efficient factories truly valued higher on the stock exchange, or do investors' concerns stop at downstream financial figures alone?

That question touches on a significant gap in the literature. The tradition of the relevance of non-financial information value has shown that non-accounting operational metrics can be associated with stock prices beyond financial figures, as evidenced in the wireless telecommunications industry (Amir & Lev, 1996), and that non-financial measures can serve as leading indicators of financial performance (Ittner & Larcker, 1998); the relevance of conventional accounting information is even believed to decline over time, necessitating the expansion of reporting to non-financial indicators (Lev & Zarowin, 1999). However, the application of that framework to agronomic metrics in the plantation industry has been nearly untouched. Indonesian capital market studies generally focus on financial ratios and disclosure variables; previous evidence even shows that standalone non-financial information is not necessarily significant to the value of the company (Sianturi et al., 2024). Throughout the author's research, there has been no study that directly examines the relevance of FFB yield, a measure of harvest productivity per hectare, and oil extraction rate, a measure of mill extraction efficiency, to the stock prices of plantation issuers, even tho both are everyday terms used by plantation management to measure their operational excellence.

This study aims to examine the effect of FFB yield and oil extraction rate on the stock prices of palm oil plantation issuers on the Indonesia Stock Exchange during the period from 2023 to the first quarter of 2026, a period that precisely encompasses the escalation of the productivity crisis and the scarcity of harvesting labor. The contribution offered is threefold. Theoretically, the research expands the literature on the relevance of non-financial information value to the untapped domain of agronomic metrics, while also testing the incremental information content of two interrelated upstream metrics. Methodologically, the research employs the latest balanced panel with strict model selection procedures, clustered standard errors, and decomposition analysis to distinguish the shared and unique information content of both predictors. Practically, the research findings inform management about which operational metrics are most valuable to communicate to the market, equip investors with upstream fundamental-based filtering tools amidst sectoral noise, and assert to regulators that the agenda of accelerating rejuvenation and harvest mechanization has direct consequences for value creation in the capital market.

LITERATURE REVIEW

Signal Theory and the Relevance of Non-Financial Information Value

The theoretical framework of this research is based on signaling theory, which views performance metrics as instruments to balance information asymmetry between management and investors: signals become credible when they are costly for low-quality entities to imitate and easily observable by their recipients (Spence, 1973; Connelly et al., 2011). In the tradition of value relevance pioneered by Ball and Brown (1968), information is said to be value-relevant if it is significantly associated with equity market prices (Barth et al., 2001), and a semi-strong efficient market will quickly absorb such public information into prices (Fama, 1970). The Ohlson (1995) valuation framework explicitly provides a place for information beyond accounting figures as value determinants, and empirical literature has filled this gap: non-financial operational metrics have been shown to incrementally associate with stock prices in industries where the technical fundamentals are not fully captured by financial reports (Amir & Lev, 1996), non-financial measures have proven to be leading indicators of financial performance (Ittner & Larcker, 1998), and the relevance of conventional accounting figures is perceived to be declining, making the expansion to non-financial indicators inevitable (Lev & Zarowin, 1999). The appeal of operational metrics also stems from their relatively difficult-to-engineer nature: unlike profit figures, which are vulnerable to earnings management practices—a concern that remains empirically relevant among Indonesian issuers (Putra et al., 2024)—physical measures such as harvest tonnage and yield are tied to biological and technical realities that are hard to manipulate. In the context of the Indonesia Stock Exchange itself, the informational content of ratios and performance indicators regarding the performance of issuers has long been a focus of research (Pinem & Hasibuan, 2023), but their examination of agronomic metrics remains an uncharted territory.

FFB Yield as the Fundamental Basis of Plantation Upstream

FFB yield tonnage of fresh fruit bunches harvested per hectare of producing plants per year is the most fundamental measure of a plantation's productivity. Agronomic literature places it as the culmination of the overall quality of management: the quality of planting materials, the age composition of the plants, fertilization, pest and disease control, as well as the adequacy and discipline of the harvesting workforce (Corley & Tinker, 2016). The gap between actual yields and genetic potential, known as the yield gap, has proven to be wide and largely explainable by management factors within the control of management (Woittiez et al., 2017). Consequently, consistently high yield achievements reflect the organization's valuable, rare, and difficult-to-imitate capabilities within the resource-based view framework (Barney, 1991). The character of plantation assets dominated by producing plants, whose accounting policy materiality has been documented in previous research (Sihombing et al., 2024), makes productivity per hectare a direct determinant of sales volume and cash flow from the same asset base. From an investor's perspective, FFB yield is a signal that meets two effectiveness criteria simultaneously: it is easy to observe because it is routinely disclosed in annual reports, and it is costly to replicate because it can only be achieved thru years of agronomic discipline. In a period when the scarcity of harvesters and the aging of plants erode national productivity, an issuer's ability to maintain or increase yield becomes even more valuable as a differentiator. Based on that argument, the first hypothesis is formulated.

H1: FFB yield has a positive effect on the stock price of palm oil plantation issuers.

Oil Extraction Rate as a Measure of Extraction Efficiency

Oil extraction rate measures the percentage of crude palm oil successfully extracted from processed fresh fruit bunches, and is commonly interpreted as a combined indicator of the quality of fruit entering the mill and the technical efficiency of processing (Corley & Tinker, 2016; Murphy et al., 2021). A high yield indicates that the fruit is harvested at optimal ripeness, the fruitlets are thoroughly extracted, transportation is quick so that free fatty acids are controlled, and the mill minimizes oil loss; conversely, harvesting unripe fruit and overripe fruit reduces both yield and oil quality (Politeknik Citra Widya Edukasi, 2025). In commercial practice, yield even becomes the basis for setting the price of fresh fruit bunches, so OER has a direct link to the economic value of each ton of fruit. Thru the lens of signaling theory, a superior OER has the potential to be interpreted by investors as evidence of operational sophistication that supports future margins and cash flows, thus it should be hypothesized a priori to have a positive impact on stock prices. Nevertheless, it should be anticipated that OER and FFB yield share the same upstream causal factors of fruit quality and harvesting discipline, so the sharper question is whether OER carries incremental information content above yield; previous evidence on the Indonesia Stock Exchange indicates that the fundamental relationship with firm value is often indirect, working thru layered mechanisms (Sitorus et al., 2025), thus the possibility that the relevance of OER value is absorbed by other metrics is a competing hypothesis worth testing. The conceptual framework of the research is presented in Figure 1, and the second hypothesis is formulated as follows.

H2: The oil extraction rate has a positive effect on the stock price of palm oil plantation issuers.

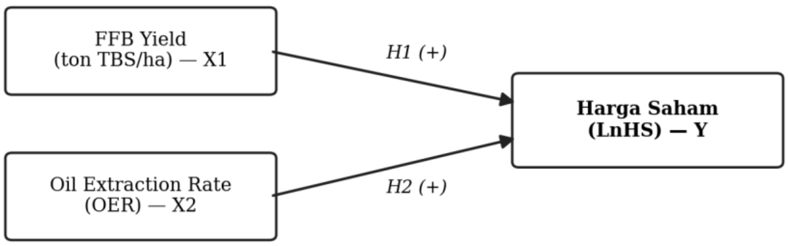

Figure 1. Research Conceptual Framework

METHODOLOGY

This research is an explanatory quantitative study based on secondary data. The population includes nineteen palm oil plantation issuers listed on the Indonesia Stock Exchange. The sample was purposively determined based on data completeness as detailed in Table 1, resulting in ten issuers: five large-capitalization (AALI, LSIP, SMAR, SIMP, TAPG) and five mid-capitalization (DSNG, SSMS, SGRO, TBLA, STAA) observed over four reporting periods (2023, 2024, 2025, and Q1 2026), forming a balanced panel of 40 observations. Harvest productivity and yield data were manually collected from annual reports and operational information disclosures of the issuers, while stock prices used the closing prices at the end of the period from the Indonesia Stock Exchange trading data. The operational definitions of the variables are presented in Table 2.

Table 1. Sample Determination Procedure

Purposive Sampling Criteria	Number of Companies
Palm oil plantation companies listed on the Indonesia Stock Exchange (Consumer Non-Cyclicals Sector, Plantation Subsector) as of the first quarter of 2026	19
Less: Companies that did not consistently publish complete financial statements and annual reports during 2023–Q1 2026	(4)
Less: Companies that did not adequately disclose operational data on Fresh Fruit Bunch (FFB) yield and Oil Extraction Rate (OER)	(5)
Final Sample Companies	**10**
Number of observation periods (2023, 2024, 2025, and Q1 2026)	**4**
Total observations (balanced panel)	**40**

Source: data processed by the author (2026).

Table 2. Operational Definitions of Variables

Variable	Notation	Operational Definition and Measurement
Stock Price	LnSP	Natural logarithm of the closing stock price at the end of the reporting period (Indonesian Rupiah). The logarithmic transformation is applied to reduce the skewness of stock price distribution across companies.
FFB Yield	FFB	Fresh Fruit Bunch (FFB) production divided by the area of mature plantations (tons per hectare per year). For the first quarter of 2026, the value is annualized.
Oil Extraction Rate	OER	Crude Palm Oil (CPO) output divided by the volume of processed Fresh Fruit Bunches (decimal). An OER ranging from 22% to 24% indicates superior extraction efficiency.

Source: developed by the author from Corley and Tinker (2016) and Woittiez et al. (2017).

Hypothesis testing was conducted using panel data regression on the following single equation:

$$LnHS_{it} = a + \beta_1 FFB_{it} + \beta_2 OER_{it} + \varepsilon_{it} \qquad (1)$$

The specification selection follows the standard panel modeling procedures: The Chow test to choose between common effect and fixed effect, the Hausman test (1978) to choose between fixed effect and random effect, and the Breusch and Pagan (1980) Lagrange multiplier test to choose between random effect and common effect (Baltagi, 2021). The feasibility of classical assumptions is examined thru the Jarque–Bera normality test, the Breusch–Pagan heteroskedasticity test, the variance inflation factor, and the Durbin–Watson statistic (Gujarati & Porter, 2009); all final inferences use robust standard errors clustered at the entity level to accommodate heteroskedasticity and intra-entity correlation (Wooldridge, 2010). To distinguish the relative contributions of the two agronomically related predictors, three complementary analyzes were conducted: standardized coefficient estimation, decomposition analysis by estimating each predictor separately, and two robustness tests in the form of a two-way fixed effect specification that added period effects and re-estimation without the first quarter 2026 observation based on the interim report.

RESEARCH RESULT AND DISCUSSION

Descriptive Statistics

Table 3 summarizes the descriptive statistics. The FFB yield of the sample issuers ranges from 17.5 to 24.2 tons per hectare with an average of 20.588 tons and a standard deviation of 2.022 tons, affirming the position of the stock exchange issuers as the national productivity front line while also showing a wide variation to test the relevance of its value. Interestingly, the mid-capitalization group recorded a higher average yield (21.32 tons) compared to the large-capitalization group (19.86 tons), a pattern consistent with the composition of more robust prime-age producing plants in mid-capitalization emitters. OER moves narrowly within a range of 19.8 to 24.0 percent with an average of 21.69 percent and a standard deviation of only 1.24 percentage points; the narrowness of this range should be noted from the outset as it limits the amplitude of variation available for yield to serve as a differentiator between observations. Stock prices ranging from Rp370 to Rp7,150 with high skewness further justify the use of natural logarithm transformation.

Table 3. Descriptive Statistics (N = 40)

Variable	Mean	Std. Dev.	Minimum	Median	Maximum
Stock Price (IDR)	1,864.75	2,037.53	370	905	7,150
LnSP	7.099	0.877	5.914	6.808	8.875
FFB Yield (tons/ha)	20.588	2.022	17.500	20.650	24.200
Oil Extraction Rate (OER)	0.217	0.012	0.198	0.215	0.240

Source: processed data (2026).

Correlation Analysis and Justification of the Panel Approach

Table 4 shows a weak and insignificant bivariate correlation between LnHS and FFB yield ($r = -0.105$) as well as a significantly negative correlation with OER ($r = -0.370$); this counterintuitive pattern is an artifact of individual heterogeneity that has been widely recognized in price-level data, as the nominal price per share is not comparable among emitters due to differences in the number of shares outstanding and nominal value policies (Baltagi, 2021). The relevant economic relationship lies in the intra-entity dimension of whether the improvement in an issuer's productivity over time is valued by the market, and therefore, the inference is based on the panel estimator with individual effects. The strong correlation between FFB and OER ($r = 0.724$; $p < 0.001$) confirms the theoretical assumption that both share a causal upstream factor in the form of fruit quality and harvest discipline; however, the variance inflation factor of both predictors at 2.103 is still well below the threshold of ten, making joint estimation feasible, and it is precisely this overlapping information that is intended to be disentangled thru decomposition analysis.

Table 4. Pearson Correlation Matrix

Variable	LnHS	FFB	OER
LnHS	1		
FFB	−0,105	1	
OER	−0,370*	0,724***	1

Explanation: *** p < 0,01; ** p < 0,05; * p < 0,10.

Model Specification Selection and Classical Assumption Tests

The model selection results in Table 5 are conclusive: the Chow test decisively rejects the common effect ($F = 1,139.91$; $p < 0.001$), the Hausman test rejects the consistency of the random effect ($\chi^2 = 14.004$; $p = 0.001$), and the Lagrange multiplier test rejects the common effect in favor of the random effect, thus the fixed effect model becomes the selected specification (Hausman, 1978; Breusch & Pagan, 1980). The classical assumption checks yielded satisfactory results: residuals are normally distributed (Jarque–Bera = 3.008; $p = 0.222$), multicollinearity is controlled (VIF = 2.103), and autocorrelation is not concerning (Durbin–Watson = 2.112). The Breusch–Pagan test detects heteroskedasticity (LM = 11.995; $p = 0.003$), which is addressed with entity-level clustered robust standard errors for all inferences (Wooldridge, 2010).

Table 5. Results of Panel Model Specification Selection

Variable	Mean	Std. Dev.	Minimum
Stock Price (IDR)	1,864.75	2,037.53	370
LnSP	7.099	0.877	5.914
FFB Yield (tons/ha)	20.588	2.022	17.500
Oil Extraction Rate (OER)	0.217	0.012	0.198

Note: CEM = common effect model; FEM = fixed effect model; REM = random effect model.

Estimation Results and Hypothesis Testing

Table 6 presents the estimation results of the three specifications with clustered standard errors; the inference relies on the fixed effect model as the selected specification. FFB yield has a significant positive effect on LnHS ($\beta = 0.1939$; $p = 0.004$): each additional ton of fresh fruit bunches per hectare is associated with a stock price appreciation of about 21.4 percent ceteris paribus, or about 10.2 percent for a more realistic improvement of half a ton achieved between periods, thus H1 is accepted. On the other hand, OER is not significant ($\beta = -8.9214$; $p = 0.249$), so H2 is not supported in the joint model. The estimation of standardized coefficients reinforces this asymmetry: one standard deviation of FFB yield is associated with 0.447 standard deviations of LnHS ($p = 0.004$), while the standardized contribution of OER is only −0.126 and not significant. The model explains 59.1 percent of the intra-entity price variation (F = 20.21; p < 0.001). Figure 2 visualizes the pattern in the data that has been deviated from the mean of each issuer: a clear positive slope is evident in the FFB yield panel, while the OER panel does not show a significant slope. As a note, the significantly large negative OER coefficient in the common effect model (−43,694) is an artifact of inter-issuer comparisons at unequal nominal prices and does not reflect the intra-entity economic relationship.

Table 6. Results of Panel Data Regression Estimation

Variable	CEM: Coefficient (Robust SE)	p-value	FEM: Coefficient (Robust SE)	p-value	REM: Coefficient (Robust SE)	p-value
Constant	13.515 (3.6502)	0.001	5.0419 (1.0460)	<0.001	5.5360 (1.2395)	<0.001
FFB Yield	0.1486 (0.1645)	0.372	0.1939*** (0.0616)	0.004	0.2042*** (0.0626)	0.002
Oil Extraction Rate (OER)	−43.694** (17.998)	0.020	−8.9214 (7.5692)	0.249	−12.178 (8.4667)	0.159
R²	0.1931	—	0.5908 (within)	—	0.5889 (within)	—
Model Fit	—	—	F = 20.21; p < 0.001	—	—	—

Note: *** p < 0.01; ** p < 0.05; * p < 0.10. GB = robust standard error clustered at the entity level. The FEM constant is the average of individual effects.

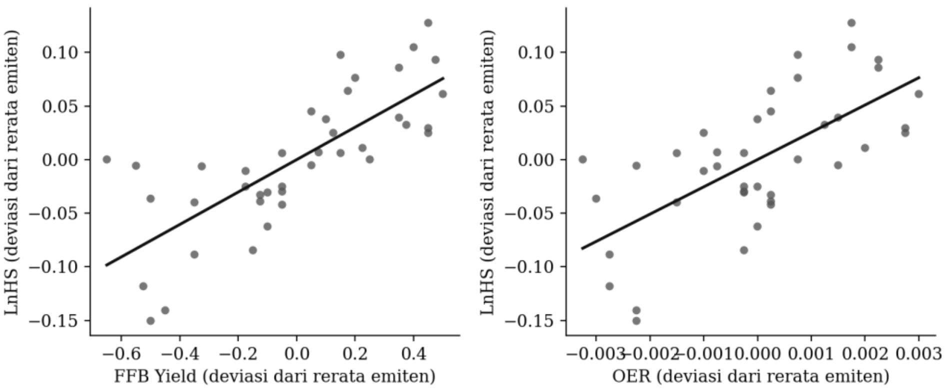

Figure 2. Intra-entity Relationship of FFB Yield and OER with LnHS (data deviated from the average of issuers)

Decomposition Analysis and Resilience Test

Columns (a) and (b) of Table 7 separate the information content of the two predictors. Estimated alone, FFB yield remains positively significant (β = 0.1513; p = 0.001) and explains 58.2 percent of the within variation, nearly equivalent to the full model, while OER estimated alone is also positively significant (β = 25.462; p = 0.002) but explains only 44.4 percent. This configuration is diagnostic: OER does not lack value information entirely, but rather its information almost entirely overlaps with that already contained in FFB yield, so when both are present together, the unique component of OER does not receive valuation reward. Column (d) shows the main findings robust against the first quarter 2026 observation expenditure based on interim reports (β FFB = 0.2008; p = 0.010).

Column (c) presents the most conservative test: the addition of period effects to the two-way fixed effect weakens the FFB coefficient to insignificance (β = 0.0971; p = 0.326). This attenuation should be reported transparently: with only four observation periods, common stocks such as the global palm oil price cycle and climate anomalies share variation with aggregate yield movements, and the research design has not been able to clearly separate the two; therefore, the H1 finding is best interpreted as a strong within-issuer association, whose causal identification requires a longer panel.

Table 7. Decomposition Analysis and Robustness Test (Fixed Effect, Clustered Standard Errors)

Variable	(a) FFB Only	(b) OER Only	(c) Two-Way Fixed Effects	(d) Excluding Q1 2026
FFB Yield	0.1513*** (0.0407)	—	0.0971 (0.0970)	0.2008** (0.0699)
Oil Extraction Rate (OER)	—	25.462*** (7.4490)	3.1765 (12.639)	−11.160 (10.795)
p-value (FFB; OER)	0.001; —	—; 0.002	0.326; 0.804	0.010; 0.315
Within R^2	0.5824	0.4444	0.1611	0.6299
Observations (N)	40	40	40	30

Note: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$. Column (c) adds the period effect to the individual effect; column (d) excludes the observation from Q1 2026.

H1 acceptance provides an affirmative answer to the question raised by this research: the capital market reads the plantation. The improvement in an issuer's harvest productivity over time is rewarded with substantial price appreciation, and the elasticity of around twenty-one percent per ton per hectare indicates that investors treat yield not merely as an operational statistic, but as a concise summary of the overall quality of plantation management: planting materials, age composition of plants, fertilization, and adequacy of harvesting labor (Corley & Tinker, 2016; Woittiez et al., 2017). These findings are consistent with the signaling theory prediction that easily observable yet costly-to-imitate metrics are the most effective signals (Spence, 1973; Connelly et al., 2011), and with classic evidence that non-financial operational information can have value relevance in industries whose technical fundamentals are not fully captured by accounting figures (Amir & Lev, 1996; Ittner & Larcker, 1998). In the framework of the resource-based view, the capability to maintain high yields amidst a scarcity of harvesters and the aging of national crops is a rare and difficult-to-imitate resource (Barney, 1991), and the market seems to value this rarity precisely during the period when the productivity crisis makes it an increasingly valuable differentiator.

The lack of support for H2 in the joint model, when read alongside the decomposition results, is the most conceptually rich finding. Yield is not irrelevant on its own; it is positively significantly associated with price but redundant: its informational content is almost entirely encompassed in harvest productivity, consistent with the correlation between the two reaching 0.724 and with the shared agronomic roots of fruit quality and harvest-transport discipline (Politeknik Citra Widya Edukasi, 2025). From the perspective of value relevance, what the market tests is the incremental information content, not just the raw association (Amir & Lev, 1996; Barth et al., 2001); the unique component of OER that is orthogonal to yield, such as the technical superiority of the factory alone, seems to have too narrow an amplitude to be moved into a valuation differentiator, considering the standard deviation of the yield sample is only 1.24 percentage points. These findings are consistent with previous evidence that standalone non-financial information is not immediately valued by the market without a clear connection to performance (Sianturi et al., 2024), and open the possibility that the relevance of yield value works indirectly or contingently thru other mechanisms, as documented in the tiered relationship patterns of Indonesia Stock Exchange issuers (Sitorus et al., 2025), rather than as a direct price determinant.

For the management of plantation issuers, the practical implications are layered. First, the priority of communication to the market should be given to the achievement and trajectory of FFB yield, because that is where the sensitivity of valuation lies; disclosing the yield remains important as a credibility support, but it cannot be relied upon as a standalone valuation differentiator. Second, because yield is the culmination of the adequacy and discipline of harvesting labor, the ongoing crisis of labor shortages (Haisawit.co.id, 2026) is not merely an operational issue but a direct threat to market value; investment in harvesting mechanization and labor retention thus has explicit justification in the capital market. For regulators, the finding that the market values productivity per hectare reinforces the urgency of accelerating replanting and improving national productivity: any failure to address yield stagnation not only erodes foreign exchange and gross domestic product (Kompas.id, 2026), but also hinders value creation in the plantation sector in the capital market.

CONCLUSIONS AND RECOMMENDATIONS

This research examines the relevance of two fundamental agronomic metrics, FFB yield and oil extraction rate, to the stock prices of ten palm oil plantation issuers on the Indonesia Stock Exchange from 2023 to the first quarter of 2026, a period marked by a productivity crisis, labor shortages, and fruit quality pressures. Two main conclusions were drawn. First, FFB yield has a significantly positive impact on stock prices: the market appreciates approximately 21.4 percent for each additional ton of fresh fruit bunches per hectare, and harvest productivity alone can explain almost three-fifths of the intra-issuer price variation. Second, the oil extraction rate has no incremental value relevance: although it is significantly positively associated when estimated separately, its informational content almost entirely overlaps with FFB yield, so its unique component does not receive valuation rewards. Answering the question in the research title, in the perception of the capital market, harvest volume is the main signal of plantation superiority, while yield is the accompanying information that has been encapsulated within it.

Theoretically, this research expands the literature on the relevance of non-financial information value to the domain of plantation agronomic metrics, which has been previously unaddressed, while also demonstrating the importance of distinguishing between gross association and the content of incremental information when two operational metrics share a causal upstream. Practically, the findings guide management to place yield trajectory at the center of investor communication narratives, provide investors with a tested upstream fundamental filtering tool, and affirm to policymakers that the agenda of crop rejuvenation and harvest mechanization has value creation consequences that are directly observable in the capital market.

A number of limitations frame the generalization of the findings. The small sample size with four observation periods limits the power of the test, and the two-way fixed effect specification indicates that the separation of productivity effects from temporal shocks along with commodity price cycles and climate has not yet been definitively achieved; therefore, the main findings are of strong within-firm associations, not final causal estimates. The observed yields are aggregates at the company level, which conceal variations between factories, and the use of price levels leaves scale heterogeneity despite being mitigated by logarithmic transformation and individual effects. Promising future research agendas include extending the full price cycle panel, testing the indirect yield mechanisms thru profitability, and utilizing variables such as the age structure of producing plants and the funding structure available in the database to model both the determinants and conditioning factors of the relevance of agronomic productivity value.

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