

Analysis of the Role of Gross Profit as an Indicator of Operational Financial Performance: A Qualitative Case Study of PT Astra Agro Lestari Tbk

Vidhini Nazhifa Rachmalimy ¹ Asri Sundari ^{2*} Evi Karyani ³ Marintan Anastasya Putri ⁴ Silvia Ananda Putri ⁵ Nisrina Salma Putri ⁶

^{1, 2*, 3, 4, 5, 6} Universitas Kebangsaan Republik Indonesia, Bandung, Indonesia

Email: asrisundari@fe.ukri.ac.id

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ABSTRACT

Purpose: This study aims to analyze changes in gross profit and its components in assessing the financial performance of PT Astra Agro Lestari Tbk.

Research Method: This study employed a quantitative descriptive design based on a documentary review. Data were obtained from the interim consolidated financial statements for the three-month periods ending March 31, 2025, and March 31, 2024, and were then analyzed using comparisons, ratios, and arithmetic decomposition.

Results and Discussion: Net revenue increased by 46.33%, cost of revenue rose by 44.31%, and gross profit grew by 60.99% to Rp937,287 million. The gross profit margin increased from 12.13% to 13.34%. Of the increase in gross profit, 75.97% was attributable to revenue growth and 24.03% to improved margins. The 21.95% decrease in inventory does not demonstrate successful sales timing, while the 7.34% increase in depreciation does not demonstrate modernization without supporting investment data.

Implications: Gross profit should be evaluated in conjunction with volume, selling price, unit cost, inventory, and cash flow to avoid overestimating efficiency.

Originality: The study provides a breakdown of gross profit and distinguishes between accounting facts and managerial interpretations in the palm oil industry.

Keywords: gross profit; gross profit margin; financial performance; inventory; palm oil industry.

1. Introduction

The agribusiness sector, particularly the palm oil industry, plays a crucial role in supporting Indonesia's national economy. As one of the world's largest producers of Crude Palm Oil (CPO), this industry's dynamics directly impact macroeconomic stability and employment (Aprina, 2014). Companies operating in this sector are required to continuously ensure the sustainability of their businesses amid intense global competition. Therefore, monitoring and evaluating the company's internal conditions is a critical priority that must be carried out regularly (Gaho, 2025). One crucial aspect requiring close oversight is the company's financial performance. Financial performance reflects the effectiveness and efficiency of management in utilizing all available resources to generate profits (Syahrani & Sisdiyanto, 2024). Through proper performance assessment, companies can identify operational weaknesses early



on and determine the necessary corrective actions. Conversely, failure to accurately assess financial performance can lead to erroneous strategic decisions and threaten the company's sustainability (Sahlan & Abdi, 2022).

PT Astra Agro Lestari Tbk is one of the leading publicly traded companies in Indonesia's oil palm plantation sector. As a publicly traded company, PT Astra Agro Lestari Tbk faces a significant responsibility to demonstrate solid financial performance to investors and stakeholders (Sunarsi *et al.*, 2021). The company operates under the pressure of global commodity price volatility, climate change, and dynamic export regulations. Additionally, changes in production and sales volumes, supply chain conditions, exchange rate fluctuations, and rising input costs can affect the company's revenue and production costs. This fluctuating business environment makes the company's financial performance a highly compelling subject of study (Hemaridani & Aini, 2024). These conditions also mean that changes in a company's profits cannot be directly interpreted as the result of an increase or decrease in internal efficiency without considering relevant external and operational factors.

To date, financial performance assessments have more often been dominated by quantitative analysis using various final profitability ratios, such as net profit. However, net profit often does not specifically reflect the performance of production and sales activities because it already accounts for operating expenses, financial expenses, taxes, and other revenue and expense components (Koeswardhana, 2020). This is where the importance of examining the gross profit indicator lies. Gross profit represents the difference between net revenue and cost of goods sold. At the same time, the Gross Profit Margin (GPM) indicates the proportion of gross profit generated from each unit of revenue. Therefore, these two indicators can provide insight into a company's ability to control direct costs associated with the products it sells (Ajustina *et al.*, 2024). However, gross profit cannot be treated as a sole measure of operational efficiency because its calculation is also influenced by selling price, sales volume, product mix, production costs, and changes in inventory value.

Previous studies have used gross profit and GPM as part of financial performance assessments. Faujiah & Pratiwi (2024) analyzed the quick ratio, debt-to-equity ratio, and GPM of PT Astra Agro Lestari Tbk and found that the company's GPM fell into the "poor" category. This finding indicates that the company is not yet able to maximize gross profit from its sales activities. Ardi (2024) also analyzed the GPM of PT Astra Agro Lestari Tbk during the 2019–2023 period and demonstrated that the average GPM value remained below the benchmark standard used. Both studies highlight the relevance of GPM as a profitability indicator; however, the analyses primarily focused on calculating and categorizing financial ratios.

Studies on other subjects also highlight the importance of gross profit in evaluating financial performance. Naen *et al.*, (2025) found that gross profit has a significant impact on the financial results analyzed, thereby reinforcing the importance of gross profit as a key performance indicator. Listyawati *et al.*, (2025), through an analysis of PT Astra International Tbk's GPM for the 2021–2023 period, obtained an average GPM of 36.40%, but classified it as below the industry standard. The study linked changes in the gross profit margin to rising production costs and fluctuations in raw material prices. Meanwhile, Halawa (2025) evaluated the performance of PT Astra Agro Lestari Tbk for the 2022–2024 period using cash flow analysis and found strong profit quality and cash conversion. These findings demonstrate that GPM and cash flow provide complementary information: GPM illustrates the relationship between revenue and cost of goods sold, while cash flow illustrates the company's ability to convert accounting profit into cash.

A synthesis of previous research indicates that the research gap does not lie in the lack of using GPM to assess the performance of PT Astra Agro Lestari Tbk, but rather in the limited number of analyses that contextually link changes in gross profit to its constituent components. Previous studies have tended to calculate ratios and compare them to specific benchmarks, but have not comprehensively examined changes in net revenue, cost of goods sold, inventory, commodity prices, and production cost components. Consequently, these analyses have not been able to fully distinguish between increases in gross profit stemming from operational efficiency and those caused by changes in CPO prices, sales volume, or product mix.

In the palm oil industry, gross profit is determined by a complex interplay between revenue and cost factors. Net revenue can be influenced by sales volume, realized selling prices, exchange rates, and product mix. Meanwhile, cost of goods sold can be influenced by production volume, raw material costs, processing costs, direct labor costs, depreciation allocated to production, and inventory changes. Changes in the balance of finished goods inventory do not, in and of themselves, prove the existence of an inventory liquidation strategy or the success of management in timing sales. Variations in production and sales volumes, seasonal patterns, inventory valuation methods, commodity prices, and supply chain conditions can cause these changes. Therefore, changes in gross profit and gross profit margin (GPM) must be analyzed alongside available supporting indicators to ensure that interpretations of operational performance do not exceed the evidence presented.

Based on this background, the research problem focuses on how changes in gross profit and its components can be used to assess the financial performance of PT Astra Agro Lestari Tbk. Specifically, this study poses the following research questions: (1) how do changes in net revenue, cost of goods sold, gross profit, and gross profit margin (GPM) of PT Astra Agro Lestari Tbk vary consistently across the compared periods; (2) how can changes in finished goods inventory be analyzed in conjunction with information on production, sales, CPO prices, and inventory turnover without assuming the existence of a specific inventory liquidation strategy; (3) how changes in cost components, including depreciation allocated to production, relate to the formation of the company's cost of goods sold and gross profit; and (4) to what extent gross profit and gross profit margin provide information regarding operational performance when evaluated alongside other financial and operational indicators.

The primary objective of this study is to analyze and describe in depth the application of gross profit in assessing the financial performance of PT Astra Agro Lestari Tbk. More specifically, this study aims to analyze changes in net revenue, cost of goods sold, gross profit, gross profit margin (GPM), inventory, and cost components using a consistent comparison period. This study employs a quantitative descriptive approach based on a documentary review, as the analysis relies on numerical data sourced from financial statements and company publications. Practically, this study is expected to provide insights and evaluation materials for company management in optimizing the control of direct production costs. Theoretically, the results of this study are expected to enrich the body of management accounting literature, particularly regarding the use of gross profit and gross profit margin (GPM) in analyzing the relationship between revenue, cost of goods sold, inventory, commodity prices, and production costs in the oil palm plantation industry. The novelty of this study lies in its integrated analysis of gross profit and its components, which goes beyond merely calculating and categorizing the gross profit margin (GPM). This study also applies a more cautious interpretation of changes in inventory and depreciation expenses by considering possible alternative explanations and limiting conclusions to the available data. Thus, gross profit is treated as an intermediate indicator for assessing the relationship

between revenue and cost of goods sold, rather than as a single measure of a company's effectiveness or efficiency.

The remainder of this paper is organized as follows. Section 2 provides a literature review and hypothesis development. Section 3 presents the research method and design. Section 4 provides the results and discussion. Section 5 presents Concluding Remarks and Recommendations.

2. Literature Review and Hypothesis Development

2.1 Gross Profit

Gross profit is the difference between net revenue and cost of goods sold during an accounting period. Net revenue is calculated by subtracting returns, allowances, and other sales deductions from gross sales. Cost of goods sold includes inventory costs or production costs directly related to goods sold (Kieso *et al.*, 2016). Gross profit indicates a company's initial ability to generate profit from production and sales activities before accounting for selling, administrative, financial, and tax expenses, as well as non-operating components. In addition to its absolute value, gross profit can be analyzed using the Gross Profit Margin (GPM), which is the ratio of gross profit to net revenue. GPM facilitates performance comparisons across periods because it shows the proportion of gross profit generated from each unit of revenue. Lee (2023) classifies GPM as an operational performance indicator because this ratio reflects the relationship between the ability to generate revenue and the control of costs associated with the company's core activities.

Gross profit is influenced by selling price, sales volume, product mix, raw material costs, direct labor costs, processing costs, production depreciation, and inventory changes. Therefore, an increase in gross profit does not always indicate improved operational efficiency, as the increase may stem from higher selling prices or the dominance of high-margin products. Kumar *et al.*, (2024) explain that integrating pricing policies, demand forecasting, and inventory management can help companies respond to market changes and optimize profit margins. In the context of inventory, the value of goods sold is transferred to cost of goods sold; thus, policies regarding inventory valuation and write-downs can affect gross profit. Badenhorst & Von Well (2023) demonstrate that inventory valuation provides valuable information for users of financial statements. Jahan & Sivadasan (2025) also show that analysts' gross margin forecasts can influence managerial decisions regarding the recognition of inventory losses.

Proper inventory management is necessary to balance the risk of stockouts with storage costs and the risk of obsolescence. Alam *et al.*, (2023) show that a good inventory management system supports inventory control and operational profitability. However, Marzolf *et al.*, (2024) emphasize that the relationship between inventory and performance is not always linear because excessively low inventory can hinder sales, while excess inventory increases storage costs. Yeboah *et al.*, (2025) also found that the impact of inventory efficiency on operating margins varies depending on demand stability and the business cycle. Therefore, changes in gross profit and gross profit margin (GPM) must be analyzed in conjunction with selling prices, production and sales volumes, unit production costs, inventory turnover, and market conditions. In the palm oil industry, this approach is necessary to distinguish between growth in gross profit stemming from cost efficiency and growth primarily driven by changes in CPO prices or sales volumes.

2.2 Financial Performance

Financial performance reflects a company's ability to manage its financial resources to generate profits, maintain liquidity, meet its obligations, and create value for shareholders. This assessment provides management with information to evaluate strategic achievements and identify operational weaknesses, while investors and creditors use it to assess the company's profit prospects and risks. Baby *et al.*, (2024) explain that financial performance can be measured through accounting-based indicators, such as Return on Assets (ROA), Return on Equity (ROE), Return on Investment (ROI), and Return on Sales (ROS), as well as market-based indicators, such as earnings per share. Türegün (2022) emphasizes that the evaluation of financial performance is multidimensional because each indicator highlights a different aspect. This is supported by Noy (2023), who demonstrates that assessing financial performance through liquidity and profitability ratios provides distinct yet complementary information—namely, regarding a company's ability to meet short-term obligations and the efficiency of asset and capital utilization in generating profits. Profitability indicates the ability to generate profits; liquidity describes the ability to meet short-term obligations; solvency reflects funding risk; while activity ratios indicate the efficiency of asset utilization.

The selection of indicators must be tailored to the purpose of the analysis to ensure that the resulting conclusions are not misleading. Nam & Tuyen (2024) distinguish financial performance measures into book-value-based and market-value-based indicators and demonstrate that liquidity and capital structure are correlated with firm performance. Duguleană *et al.*, (2024) also explain that the relationship between capital structure and financial performance may vary depending on firm characteristics and business environment conditions. From an internal perspective, firm size, operational efficiency, leverage, and working capital are factors associated with variations in financial performance (Nguyen *et al.*, 2023). D'Amato *et al.*, (2024) demonstrate that a combination of financial and non-financial characteristics influences a company's profitability. Therefore, an increase in profit cannot be directly interpreted as an improvement in overall performance without considering the company's assets, equity, debt, cash flow, and external conditions.

Financial performance is also influenced by a company's ability to manage working capital and convert operational activities into cash. Kiyamaz *et al.*, (2024) found that the cash conversion cycle is inversely related to firm performance, although the effects of inventory, accounts receivable, and trade payables differ between developed and developing countries. Johan *et al.*, (2024) also demonstrated that companies with longer cash conversion cycles tend to have lower profitability. In line with this, Arifani (2023) explained that working capital components—such as cash turnover, accounts receivable, inventory, and current liabilities—must be managed alongside other strategic factors due to their connection to a company's operational efficiency and profitability.

In this study, gross profit and Gross Profit Margin are used to assess the relationship between net revenue and cost of goods sold, but are not treated as the sole measures of financial performance. An analysis of PT Astra Agro Lestari Tbk needs to supplement these two indicators with revenue growth, production costs, production and sales volumes, CPO prices, inventory turnover, liquidity, and operating cash flow. This integrated approach is necessary to distinguish performance improvements stemming from operational efficiency from profit growth resulting from changes in commodity prices or market conditions.

2.3 Cost Characteristics and Inventory Management in the Palm Oil Industry

The palm oil industry has a complex cost structure because it encompasses plantation operations, harvesting, transportation of fresh fruit bunches (FFB), processing at the mill, storage, and product distribution. At the plantation level, costs include labor, fertilizers, pesticides, crop maintenance, harvesting, and FFB transportation. At the processing level, companies bear the costs of energy, mill labor, auxiliary materials, machinery maintenance, waste management, and depreciation of production assets. Haryati *et al.*, (2022) show that CPO production involves various activities and stakeholders, so cost assessments need to cover the entire production cycle. Mulyasari *et al.*, (2023) also identified labor costs, equipment constraints, policy changes, and compliance with sustainability standards as operational challenges facing oil palm plantations. This cost structure consists of costs that are relatively fixed in the short term—such as depreciation and some maintenance costs—as well as variable costs that fluctuate with production volume, such as raw materials, energy, transportation, and certain labor costs.

Cost characteristics are also influenced by technology, production capacity, plantation productivity, and value chain integration. Anyaoha & Zhang (2023) demonstrate that differences in processing technologies result in variations in resource requirements, production output, and environmental impacts. The utilization of byproducts and production waste has the potential to reduce resource use while improving process efficiency. Foong & Ng (2022) demonstrate that integrating plantation, processing, transportation, and distribution activities can increase value added and resource efficiency within the palm oil value chain. In line with this, Adwiyah *et al.*, (2024) emphasize that improving the performance of the palm oil supply chain requires increased productivity, optimized logistics, maintenance of product quality, and coordination among farmers, industry, and distributors. However, an increase in depreciation costs cannot be directly interpreted as evidence of modernization, mechanization, or capacity expansion. Such interpretations must be supported by information on capital expenditures, additions to fixed assets, production capacity, the adoption of new technologies, and management disclosures.

Inventory management in the palm oil industry encompasses production inputs, work-in-progress, CPO, palm kernel oil, and their derivatives. Fresh fruit bunches (FFB) must be processed immediately after harvest to maintain oil quality, whereas CPO can be stored but requires tanks, quality control, and storage costs. Inventory levels must therefore be adjusted according to FFB supply, mill capacity, sales volume, demand, distribution schedules, and market conditions. Adewale *et al.*, (2024) indicate that palm oil production, demand, and prices exhibit seasonal variations, making information on price patterns essential for production and inventory planning. Rokhim (2023) found that domestic CPO prices exhibit high volatility and are correlated with export volumes and exchange rates over the long term. Sianturi (2024) also shows that commodity price fluctuations are linked to the risks and financial performance of Indonesian palm oil companies. Therefore, a decrease in inventory levels does not in itself prove that a company intentionally sold stock when prices were favorable. Variations in production, sales, seasonal factors, inventory valuation methods, or supply chain disruptions may cause such changes. Inventory analysis must be supplemented with data on production and sales volumes, realized selling prices, unit costs, mill capacity, inventory turnover, exchange rates, and market CPO prices.

3. Research Method

This study employs a quantitative descriptive design with a document-based case study approach to analyze the formation of gross profit and the financial performance of PT Astra Agro Lestari Tbk. This design was chosen because the primary research data consists of numerical figures derived from the company's financial statements and operational information. At the same time, the analysis is conducted through ratio calculations, value changes, and interperiod comparisons. This study does not use interviews, thematic coding, qualitative data reduction, or source triangulation. The unit of analysis is PT Astra Agro Lestari Tbk, while the units of observation are the company's data for the first quarter of 2024 and the first quarter of 2025. The study does not test causal relationships or statistical hypotheses but identifies and explains changes in gross profit as well as the financial and operational factors associated with those changes.

The research data consists of secondary data obtained from PT Astra Agro Lestari Tbk's interim consolidated financial statements for the three-month periods ending March 31, 2024, and March 31, 2025; the 2024 annual report; public presentations; and the company's operational information published on the company's website and the Indonesia Stock Exchange. The data collected includes net revenue, cost of goods sold, gross profit, raw material inventory, work-in-progress inventory, finished goods inventory, depreciation allocated to production, capital expenditures, fixed assets, production volume, sales volume, average realized selling price, and product mix—to the extent available in the company's publications. External data in the form of monthly CPO prices were obtained from officially published commodity price databases, while rupiah exchange rate data were obtained from Bank Indonesia. As a sectoral benchmark, PT Astra Agro Lestari Tbk's gross profit margin (GPM) and revenue growth were compared with those of publicly listed oil palm plantation companies that published interim financial reports for the same period.

Data collection was conducted through a documentary study using data extraction sheets. The procedure included: (1) identifying financial statements and operational publications corresponding to the study period; (2) recording the value of each component in millions of rupiah; (3) grouping data based on revenue, cost of revenue, gross profit, inventory, production costs, and operational indicators; (4) verifying consistency between the statement of financial position, the income statement, and the notes to the financial statements; and (5) calculating changes and ratios using consistent definitions. All figures were retained in the units specified in the source reports. If there were classification differences between periods, the data were adjusted based on the notes to the financial statements and explained in the table notes, without combining non-comparable accounts.

Period-to-period comparisons are performed separately according to the characteristics of the financial statements. Net revenue, cost of revenue, gross profit, production volume, and sales volume are compared between the three-month periods ending March 31, 2025, and March 31, 2024, as a year-on-year comparison. Inventory balances are compared between March 31, 2025, and March 31, 2024, to ensure consistency with the gross profit analysis period. The comparison of inventory between March 31, 2025, and December 31, 2024, is used solely as a supplementary analysis of sequential changes in financial position and is not used to explain annual gross profit growth. This distinction is made to prevent drawing conclusions not supported by period equivalence.

Data analysis is conducted using descriptive statistics and comparative analysis. The first stage calculates the growth of net revenue, cost of revenue, gross profit, and inventory in both absolute values

and percentages. The second stage calculates the gross profit margin (GPM) by dividing gross profit by net revenue, as well as the cost of goods sold ratio by dividing cost of goods sold by net revenue. The third stage calculates inventory turnover by dividing cost of goods sold by average inventory. The average inventory for the first quarter of 2025 is calculated based on the balances as of December 31, 2024, and March 31, 2025, while the average inventory for the first quarter of 2024 is calculated based on the balances as of December 31, 2023, and March 31, 2024. Days of inventory are calculated based on 90 days divided by the quarterly inventory turnover rate. The fourth step compares changes in margins with production volume, sales volume, realized selling price, market CPO price, product mix, production cost per unit, and exchange rates. The final stage compares the company's gross profit margin with that of peer companies during the same period to provide sectoral context. The measurement of research variables is summarized in Table 1.

Table 1. Research Variables and Measures

Variable	Code	Indicators and measurements	Data source
Net income	NI	Revenue after sales deductions; year-over-year change = $(\text{Revenue 2025} - \text{Revenue 2024}) / \text{Revenue 2024} \times 100\%$	Income Statement and Revenue Notes
Cost of revenue	COR	Cost of goods sold; COGS ratio = $\text{COGS} / \text{net revenue} \times 100\%$	Income Statement and BPP Notes
Gross profit	GP	Net revenue – cost of revenue	Income Statement
<i>Gross Profit Margin</i>	GPM	Gross profit / net revenue $\times 100\%$	The researchers' calculations show that
Inventory	INV	Raw materials, work in progress, finished goods, and other inventory; changes in inventory balances and composition	Statement of Financial Position and Inventory Notes
Inventory Turnover	IT	Cost of sales/average inventory	The researchers' calculations show that
Inventory Day	ID	90 days/quarterly inventory turnover	The researchers' calculations show that
Operating Activities	OA	Production volume, sales volume, realized selling price, and product mix	Operational reports and public presentations
Production costs	PC	Production cost components, production depreciation, and cost per unit, if such data is available in the company's disclosures	Notes to the Financial Statements
External factors	EF	Average CPO prices and exchange rates for January–March 2024 and January–March 2025	Official commodity price sources and Bank Indonesia
Capital expenditures and production assets	CP	Capital expenditures, additions to fixed assets, and changes in capacity reported by the company	Cash flow statement, fixed asset register, and management report
Benchmark Performance	BP	Revenue growth and gross profit margin of comparable companies during the same period	Interim financial statements of comparable company

The results are interpreted by distinguishing between accounting facts, calculated results, and explanations that remain speculative. A decrease in inventory is not treated as evidence that management intentionally released stock when prices were favorable. Such changes are analyzed in conjunction with production, sales, seasonal patterns, inventory composition, market prices, and supply chain conditions. Similarly, an increase in depreciation is not automatically interpreted as modernization, mechanization, or capacity expansion. Such interpretations are used only when supported by data on

capital expenditures, asset additions, production capacity, or official management disclosures. Gross profit and gross profit margin (GPM) are evaluated as indicators of the relationship between revenue and cost of goods sold, not as a single measure of financial performance effectiveness.

Data reliability is ensured through internal cross-checks among financial statement components. Gross profit is recalculated from the difference between net revenue and cost of goods sold, while inventory balances and depreciation are traced back to the notes to the financial statements. Each calculation result is double-checked and presented with consistent periods, units, formulas, and sources. Since the study uses public data and does not involve human respondents, the data collection procedure does not require survey instruments or participant consent. The scope of the study is limited to two quarterly periods; therefore, the results illustrate short-term changes and are not used to infer long-term trends or cause-and-effect relationships.

4. Results and Discussion

4.1 Analysis Results

The research results are presented based on the interim consolidated financial statements of PT Astra Agro Lestari Tbk for the three-month periods ended March 31, 2025, and March 31, 2024. The analysis focuses on changes in net revenue, cost of revenue, gross profit, gross profit margin, finished goods inventory, and depreciation of fixed assets allocated to production costs. The comparison of income statement performance is conducted on a year-on-year basis. At the same time, changes in inventory between March 31, 2025, and December 31, 2024, are presented separately as a sequential financial position analysis. This separation is necessary because the two comparisons are based on different periods.

Table 2. Changes in the Components of Gross Profit at PT Astra Agro Lestari Tbk

Financial components	March 31, 2025 (in millions of rupiah)	March 31, 2024(in millions of rupiah)	Change (in millions of rupiah)	Change (%)
Net Revenue	7.023.961	4.799.927	2.224.034	46.33
Cost of Revenue	6.086.674	4.217.718	1.868.956	44.31
Gross Profit	937.287	582.209	355.078	60.99
Gross Profit Margin	13.34%	12.13%	1.21 poin persentase	9.96*
Cost of Revenue Ratio	86.66%	87.87%	-1.21 poin persentase	-1.38*

Source: Compiled from PT Astra Agro Lestari Tbk, Interim Consolidated Financial Statements as of March 31, 2025 and 2024.

Table 2 shows that net revenue increased by Rp2,224,034 million, or 46.33%, from Rp4,799,927 million in the first quarter of 2024 to Rp7,023,961 million in the first quarter of 2025. During the same period, cost of revenue increased by Rp1,868,956 million, or 44.31%. Since revenue growth exceeded the growth in cost of revenue, gross profit increased by Rp355,078 million, or 60.99%, from Rp582,209 million to Rp937,287 million. The gross profit margin (GPM) increased from 12.13% to 13.34%, a rise of 1.21 percentage points. Meanwhile, the cost of goods sold-to-net revenue ratio decreased from 87.87% to 86.66%. These results indicate an improvement in the margin between revenue and cost of goods sold, but do not yet explain whether this improvement stems from efficiency in unit costs, higher selling prices, increased sales volume, or changes in product mix.

To clarify the sources of the change in gross profit arithmetically, the increase in gross profit of Rp355,078 million is decomposed into the effect of revenue growth on the base-year margin and the effect of changes in margin on current-year revenue. This decomposition is an accounting identity, not a test of cause-and-effect relationships.

Table 3. Arithmetic Breakdown of the Increase in Gross Profit

Components of change	Value (in millions of rupiah)	Contribution to the increase in gross profit
The Impact of Revenue Growth on Gross Profit Margin (GPM) in 2024	269.765	75.97%
The Impact of an Increase in GPM on Revenue in 2025	85.313	24.03%
Total Increase in Gross Profit	355.078	100.00%

Source: Researchers' calculations based on PT Astra Agro Lestari Tbk's Interim Consolidated Financial Statements as of March 31, 2025, and 2024.

The breakdown in Table 3 shows that approximately Rp269,765 million, or 75.97% of the increase in gross profit, is arithmetically linked to revenue growth at the margin level in 2024. The remainder, amounting to Rp85,313 million or 24.03%, is linked to an increase in the gross profit margin in 2025. Thus, the increase in gross profit is driven more by revenue growth than by changes in margins. However, this breakdown cannot yet distinguish the effects of CPO selling prices, sales volume, exchange rates, and product mix because these indicators are not presented at the same level of detail in the analyzed data. Therefore, gross profit growth cannot be cited as sole evidence of improved operational efficiency.

Table 4. Sequential Changes in Finished Goods Inventory

Types of finished goods inventory	March 31, 2025 (in millions of rupiah)	December 31, 2024 (in millions of rupiah)	Change (in millions of rupiah)	Change(%)
Crude palm oil and its derivatives	1.648.441	2.223.983	(575.542)	(25.88)
Palm kernel and its derivatives	420.773	427.708	(6.935)	(1.62)
Other	1.287	1.075	212	19.72
Total finished goods inventory	2.070.501	2.652.766	(582.265)	(21.95)

Source: Adapted from PT Astra Agro Lestari Tbk, Interim Consolidated Financial Statements as of March 31, 2025.

Table 4 shows that total finished goods inventory decreased by Rp582,265 million, or 21.95%, from Rp2,652,766 million as of December 31, 2024, to Rp2,070,501 million as of March 31, 2025. The decline was primarily driven by a decrease in inventories of crude palm oil and its derivatives by Rp575,542 million, or 25.88%. Inventories of palm kernel and its derivatives decreased by Rp6,935 million, or 1.62%, while other inventories increased by Rp212 million, or 19.72%. In terms of composition, crude palm oil and its derivatives remained the largest portion of finished goods inventory.

These inventory changes only reflect a decrease in book value during the first three months of 2025. This data does not prove that management intentionally released inventory to capitalize on rising CPO prices or successfully timed sales. The decrease in inventory balances may be related to changes in production volume, sales volume, seasonal patterns, unit cost of goods sold, inventory valuation,

product mix, or supply chain conditions. Furthermore, since the comparison is to December 31, 2024, the inventory changes in Table 3 are not used as a direct explanation for the growth in gross profit between the first quarter of 2024 and the first quarter of 2025.

Table 5. Depreciation of Fixed Assets Allocated to Production Costs

Cost Components	March 31, 2025 (in millions of rupiah)	March 31, 2024 (in millions of rupiah)	Change (in millions of rupiah)	Change (%)
Depreciation of fixed assets included in production costs	192.628	179.452	13.176	7.34
Proportion of cost of sales	3.16%	4.25%	- 1.09 poin persentase	-

Source: Compiled from PT Astra Agro Lestari Tbk, Interim Consolidated Financial Statements as of March 31, 2025 and 2024.

Table 4 shows that depreciation of fixed assets allocated to production costs increased by Rp13,176 million, or 7.34%, from Rp179,452 million in the first quarter of 2024 to Rp192,628 million in the first quarter of 2025. Although the absolute value increased, its proportion of cost of revenue decreased from 4.25% to 3.16%. This decline in proportion occurred because cost of revenue grew faster than production depreciation. Thus, while the increase in depreciation contributed to a nominal rise in production costs, its relative contribution to cost of revenue actually decreased.

The increase in depreciation should not be interpreted as evidence of modernization, mechanization, or capacity expansion, as such a conclusion would require supporting data on capital expenditures, additions to fixed assets, changes in production capacity, and official disclosures by management. Depreciation also does not represent cash outflows in the current period but rather the allocation of asset acquisition costs over their useful lives. Therefore, the conclusion that can be drawn from the data is that there has been an increase in the allocation of depreciation to production costs, not a change in the company's technology or capacity.

4.2 Discussion

The increase in PT Astra Agro Lestari Tbk's gross profit in the first quarter of 2025 was primarily driven by growth in net revenue, accompanied by a margin improvement to a lesser extent. An arithmetic decomposition shows that 75.97% of the increase in gross profit stemmed from the impact of revenue growth on the base-year margin, while 24.03% resulted from an increase in the gross profit margin (GPM). These findings indicate that revenue scale growth was the dominant factor in the increase in gross profit. Although cost of goods sold rose by 44.31%, this increase was lower than the 46.33% revenue growth, resulting in a rise in the gross profit margin from 12.13% to 13.34%. From an accounting perspective, this indicates an improvement in the relationship between revenue and cost of goods sold. However, the 1.21 percentage point increase in the margin is not sufficient to prove production cost efficiency because the analyzed data did not distinguish between changes in cost per unit, realized selling prices, sales volume, and product mix. Thus, the research results support the use of gross profit to evaluate core operating performance but do not support the claim that the entire increase in gross profit stems from successful cost control.

These findings expand upon the research by Faujiah and Pratiwi (2024) and Ardi (2024), who used the gross profit margin (GPM) to assess the performance of PT Astra Agro Lestari Tbk by comparing

the ratio's value against specific standards. This study not only categorizes GPM levels but also details changes in revenue, cost of goods sold, and the arithmetic contribution of revenue growth, as well as how changes in margins affect the increase in gross profit. This approach aligns with Lee (2023), who positions GPM as an indicator of the relationship between the ability to generate revenue and the management of costs associated with core activities. Nevertheless, GPM cannot be treated as a sole measure of financial performance. Baby *et al.*, (2024) and Türegün (2022) emphasize that financial performance is multidimensional and must be assessed through profitability, liquidity, solvency, activity, and market-based measures. Noy (2023) also demonstrates that profitability and liquidity ratios provide distinct yet complementary information. Therefore, the increase in GPM in this study indicates an improvement in gross profit levels, not evidence that the company's overall financial condition has improved.

The 21.95% decrease in finished goods inventory between December 31, 2024, and March 31, 2025, also requires careful interpretation. This decrease was primarily driven by a 25.88% reduction in the value of crude palm oil (CPO) and its derivatives. However, inventory balances merely reflect the value of products still held as of the reporting date and do not directly reveal the reasons behind the changes. Consequently, the study's findings do not support the narrative that the company intentionally released inventory to capitalize on favorable CPO prices or successfully executed market timing. Such a conclusion would require evidence regarding inventory volumes, transaction timing, realized selling prices, sales policies, and management statements. The decline in inventory may also be related to changes in production and sales volumes, seasonal harvest patterns, product mix, inventory valuation, and supply chain disruptions. Adewale *et al.*, (2024) explain that palm oil production, demand, and prices experience seasonal variations that have implications for production and inventory planning. Adwiyah *et al.*, (2024) also emphasize the importance of coordination among productivity, logistics, product quality, and supply chain actors in the palm oil industry.

Differences in the comparison periods further limit the relationships that can be drawn between inventory and gross profit growth. Revenue and gross profit are compared between the first quarter of 2025 and the first quarter of 2024, while available inventory is compared between March 31, 2025, and December 31, 2024. Thus, these inventory changes reflect sequential movements over three months, rather than annual changes that are directly comparable to gross profit growth. The relationship between inventory and profitability is also not always linear. Marzolf *et al.*, (2024) explain that excessively high inventory can increase storage costs and the risk of depreciation, while excessively low inventory can disrupt demand fulfillment. Yeboah *et al.*, (2025) demonstrate that the impact of inventory efficiency on profitability depends on demand stability and the business cycle. Meanwhile, Arifani (2023) found that cash and inventory turnover have a positive but insignificant relationship with profitability. These findings reinforce the argument that an inventory reduction cannot automatically be treated as a cause of increased revenue or gross profit.

Commodity price volatility also offers a possible explanation for changes in revenue and margins. Rokhim (2023) found that domestic CPO prices exhibit high volatility and are correlated with export volumes and exchange rates over the long term. Sianturi (2024) also demonstrated that commodity price fluctuations are linked to the financial performance of Indonesian palm oil companies. Therefore, revenue growth at PT Astra Agro Lestari Tbk may be influenced by increases in selling prices, higher volumes, changes in exchange rates, or a combination of all three. However, this study does not yet have separate data on the contribution of each of these factors. Without information on realized CPO selling prices, production and sales volumes, product mix, and comparable unit costs, the study

cannot determine whether the increase in gross profit margin primarily reflects operational efficiency or more favorable commodity price conditions. The research findings are therefore presented as a descriptive analysis of financial changes, rather than a causal explanation of management decisions or market conditions.

The 7.34% increase in depreciation of fixed assets allocated to production costs indicates a nominal rise in the allocation of production asset expenses. However, its proportion of cost of goods sold decreased from 4.25% to 3.16% because total cost of goods sold grew at a faster rate. This finding does not prove the existence of modernization, mechanization, or capacity expansion. Depreciation is the process of allocating the acquisition cost of an asset over its useful life; therefore, an increase in depreciation may be caused by the addition of assets, a change in the timing of when assets begin to be used, a change in accounting estimates, or a change in the composition of depreciated assets. Anyaoha and Zhang (2023) show that differences in processing technologies can affect resource use and production process performance, while Foong and Ng (2022) explain that integrating technology, transportation, and processing can improve the efficiency of the palm oil value chain. However, this concept cannot be used to conclude that the increase in depreciation at PT Astra Agro Lestari Tbk stems from technology investments without supporting data on capital expenditures, asset additions, changes in production capacity, and management disclosures.

Overall, gross profit and gross profit margin (GPM) serve as intermediate indicators for evaluating a company's ability to maintain the difference between net revenue and cost of goods sold. These indicators are more closely tied to production and sales activities than net income because they are not yet affected by administrative expenses, financial expenses, taxes, or non-operational components. However, their effectiveness must be assessed based on three criteria: the ability to reflect changes in core operating margins, the consistency of comparisons across periods, and their connection to supporting operational information. Based on the first criterion, the increase in the gross profit margin indicates an improvement in margins in the first quarter of 2025. Based on the second criterion, income statement data have been compared consistently, but inventory data are only available for sequential comparisons. Based on the third criterion, limitations in data regarding volume, selling price, unit cost, product mix, exchange rates, and the performance of comparable companies mean that the source of the margin improvement cannot yet be definitively identified. Therefore, gross profit is relevant for assessing one dimension of financial performance. However, it must be used in conjunction with other profitability ratios, liquidity, operating cash flow, inventory turnover, and operational indicators to produce a more comprehensive assessment.

5. Concluding Remarks and Recommendation

This study aims to analyze changes in gross profit and its components in assessing the financial performance of PT Astra Agro Lestari Tbk. The study employs a quantitative descriptive design based on a documentary review, comparing the interim consolidated financial statements for the three-month periods ending March 31, 2025, and March 31, 2024. The results show that net revenue increased by 46.33%, cost of revenue increased by 44.31%, and gross profit increased by 60.99%. The gross profit margin (GPM) rose from 12.13% to 13.34%, while the cost of revenue-to-net revenue ratio decreased from 87.87% to 86.66%. An arithmetic decomposition shows that 75.97% of the increase in gross profit was attributable to revenue growth at the base-year margin. In comparison, 24.03% was attributable to

an increase in the gross profit margin. Therefore, the increase in gross profit primarily reflects revenue growth accompanied by margin improvement, but cannot yet be fully attributed to increased production cost efficiency. The 21.95% decrease in finished goods inventory between December 31, 2024, and March 31, 2025, merely reflects a change in book value on a sequential basis and does not prove that the company intentionally liquidated inventory when CPO prices were favorable. This change may be related to production and sales volumes, seasonal patterns, product mix, inventory valuation, or supply chain conditions. Similarly, the 7.34% increase in depreciation of fixed assets in production costs indicates a nominal rise in cost allocation, not direct evidence of modernization, mechanization, or capacity expansion. Conclusions regarding physical investment require support from data on capital expenditures, asset additions, changes in production capacity, and official management disclosures. Thus, gross profit and gross profit margin (GPM) are relevant as indicators of the relationship between net revenue and cost of goods sold. However, they are not a single measure of the company's effectiveness or overall financial performance.

Theoretically, this study positions gross profit as an intermediate indicator that must be analyzed in conjunction with operational and external factors, rather than compared against specific ratio standards. The practical value of this study lies in distinguishing between accounting facts, calculated results, and managerial interpretations. Management is advised to evaluate the gross profit margin (GPM) alongside realized selling prices, production and sales volumes, unit production costs, product mix, inventory turnover, and market prices for crude palm oil (CPO). Increases in depreciation should also be evaluated by comparing these additional costs against asset productivity, capacity utilization, and return on investment. Investors and creditors should use gross profit and GPM alongside indicators of liquidity, solvency, operating cash flow, inventory turnover, and net profitability so performance assessments do not rely on a single financial metric.

This study is limited to a single company and two quarterly periods; therefore, the results reflect short-term changes and cannot be generalized to the entire palm oil industry. Fundamental differences in inventory data comparisons also prevent inventory changes from being directly linked to annual gross profit growth. Furthermore, the analyzed data does not yet allow for the separation of the effects of sales volume, realized CPO selling prices, production volume, unit costs, product mix, exchange rates, and the performance of comparable companies. Future research is recommended to use panel data from multiple companies with a longer observation period, include operational indicators and commodity prices, and employ price–volume–cost decomposition analysis. A mixed-methods approach could be used if future research actively collects evidence from interviews, document coding, and management policy information to explain the considerations behind production, inventory, and sales decisions.

Statement of Use of Generative AI

During the preparation of this work, the author used generative artificial intelligence tools to support the scientific writing process. Grammarly was used to check grammar, refine writing style, and improve clarity in scientific writing. All interpretations, analyses, and conclusions presented in this study are the sole responsibility of the author.

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Corresponding author

Asri Sundari can be contacted at: asrisundari@fe.ukri.ac.id