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Exploring Role of Good Corporate Governance in Moderating Effects of Inventory Turnover and Sales Growth on Profitability: Evidence from Indonesia's Palm Oil Companies

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Abstract

This research is motivated by several external factors affecting the palm oil industry, including the COVID-19 pandemic, the decline in Crude Palm Oil (CPO) prices, cooking oil scarcity, and the government's CPO export ban policy, all of which have impacted the economic and operational performance of palm oil companies. This study focuses on analyzing the influence of Inventory Turnover (ITO) and Sales Growth (SG) on profitability, measured by Return on Assets (ROA), in palm oil companies listed on the Indonesia Stock Exchange during the 2019-2023 period. Furthermore, this study explores the moderating role of Good Corporate Governance (GCG), measured through the board of directors and the board of commissioners, in the relationship between the independent and dependent variables. The research employs a quantitative method with panel data regression analysis. A sample of 16 companies was selected using purposive sampling, with data sourced from financial statements and other secondary sources. Data processing was conducted using EViews 13 software. The results indicate that ITO negatively and significantly affects ROA, likely due to price volatility and market conditions. Conversely, SG demonstrates a positive and significant influence on ROA, suggesting that increased sales positively impact company profits. GCG significantly moderates the relationship between ITO and ROA, but does not significantly moderate the relationship between SG and ROA. These findings highlight the importance of applying good corporate governance principles, especially when facing uncertain economic conditions.

Keywords: Inventory Turnover, Sales Growth, Profitability, Good Corporate Governance, Palm Oil Company.

Introduction

Economic growth is a primary driver of a country's development, and Indonesia recognizes the palm oil industry as playing a crucial role in its economic development. Data

from the Central Bureau of Statistics (2024) indicates that oil palm plantations occupy the largest land area in Indonesia, covering 15,435.70 hectares. Furthermore, the palm oil industry provides employment for 16 million workers directly and indirectly, solidifying Indonesia's position as the world's largest palm oil producer.

However, the COVID-19 pandemic began in 2019 and had widespread negative impacts on various aspects of life, including health, education, social well-being, and the economy. Naseer et al. (2023) note that the COVID-19 outbreak led to reduced company operations, high unemployment rates, and a decline in global trade, resulting in significant economic losses. In Southeast Asia, the agricultural sector, particularly oil palm plantations, also suffered. Tan et al. (2023) reported a decrease in planted area, reduced oil palm production, and labor shortages. Subsequently, in 2020, the pandemic contributed to a decline in Crude Palm Oil (CPO) prices. According to the Indonesian Oleochemical Producers Association (2020), CPO prices decreased by 22.72% throughout 2020, leading to sudden, large-scale sales.

According to the Indonesian Palm Oil Association (GAPKI) (2022), Indonesia experienced a decline in palm oil production in 2021, exhibiting an unusual trend. Typically, the second semester sees higher palm oil production than the first; however, in 2021, production was lower, with Crude Palm Oil (CPO) production reaching 46.8 million tons, a 0.31% decrease compared to 47 million tons in 2020 and 51.8 million tons in 2019. This decrease is attributed to 2021 being a post-COVID-19 recovery year. While demand for palm oil tended to increase, production was hampered by weather conditions, limited fertilizer availability, and labor shortages. In 2021, palm oil consumption increased by 6% compared to 2020, leading to rising cooking oil prices and scarcity.

The National Research and Innovation Agency (2024) reports that 73.83% of Indonesia's total agricultural export value comes from palm oil commodities. The Coordinating Ministry for Economic Affairs of the Republic of Indonesia (2024) states that Indonesia produces over 56 million tons of palm oil and exports 26.33 million tons to more than 125 countries for use in food, energy, and other industries. However, the Cabinet Secretariat of the Republic of Indonesia (2022) notes that the government imposed an export ban on CPO and its derivatives. Although the policy lasted only one month, it had a negative impact, with research by Haq (2024) indicating that the export ban led to decreased production and income.

Given the various phenomena occurring within the palm oil plantation sector, it is important to understand the inventory turnover and sales growth of palm oil companies during the 2019-2023 period, how these factors influence their profitability, and the moderating role of good corporate governance. Previous studies offer conflicting results. For example, Naidu & Kasthuri (2021) found that inventory turnover positively and significantly affects profitability, while Garba et al. (2020) reported a negative and significant effect. Similarly, Asadifard et al. (2023) stated that sales growth has a positive and significant effect on profitability, whereas Marella et al. (2023) found no significant effect. Regarding the moderating role of good corporate governance, Fatmawati et al. (2024) concluded that good corporate governance can moderate the relationship between inventory turnover and

profitability, but not the relationship between sales growth and profitability. Therefore, a re-examination is warranted, considering different phenomena, company samples, and market conditions.

Literature Review

Signaling Theory

Signaling theory emphasizes the importance of companies providing signals or information about their condition through financial reports to users of financial statements. According to Adelia et al. (2024), Michael Spence introduced signaling theory in 1973, stating that when someone provides information about a company's condition, it is considered a signal.

Agency Theory

Agency theory posits a framework for understanding the relationship between two key actors: the principal and the agent. Drawing upon the foundational work of Berle and Means (1932), as cited by Al-Faryan (2024), agency theory recognizes that company owners do not always exert direct control over the managers entrusted with operational oversight. Jensen and Meckling (1976), as further elaborated by Astutik et al. (2024), extended this theory to address the inherent information asymmetry between principals and agents.

Inventory Turnover

Inventory turnover, an activity ratio, reflects the efficiency and effectiveness of a company's management in utilizing its assets to generate income Akbar & Ikhsan, (2024). Activity ratios, in general, provide insights into how well a company manages its business operations. Specifically, inventory turnover helps assess the efficiency with which a company utilizes its inventory to generate sales (Higgins, 2016: 398).

Sales Growth

Sales growth, a growth ratio, indicates a company's sales change over a specific period, reflecting the magnitude of increase or decrease in revenue over time. According to Nuševa et al. (2024), sales growth is a key indicator of a company's overall performance and its ability to attract investors. Sales growth is valuable for evaluating a company's profitability (Subramanyam, 2014: 471).

Profitabilty

Profitability reflects the net outcome of various policies and decisions. While previously examined ratios offer insights into the effectiveness of a company's operations, profitability ratios demonstrate the combined impact of liquidity, asset management, and debt on operating results (Brigham & Ehrhardt, 2008: 132). In this research, Return on Assets (ROA) is employed as a measure of profitability. Return on Assets (ROA) was selected as the primary variable in this study due to its comprehensive assessment of company effectiveness. Widiyanti & Bakar (2014) argue that when considered in isolation, net profit margin and asset turnover ratio fail to adequately measure overall company performance. Specifically, net profit

margin does not account for asset utilization, while the asset turnover ratio neglects profitability within sales. ROA addresses these limitations by integrating both profitability and asset efficiency.

Good Corporate Governance

Corporate governance encompasses a framework of laws, regulations, and procedures that influence a company's operations and the decisions made by its managers (Brigham & Ehrhardt, 2008: 518). In this study, the number of members on the board of commissioners is used as a proxy for corporate governance, based on the agency theory principle that the board of commissioners represents the highest level of internal control within the company. Furthermore, the number of members on the board of directors is also used as a corporate governance measure, reflecting the agency theory perspective that the board of directors acts as an agent for stakeholders.

Research Method

Descriptive Statistic

Descriptive statistical analysis provides an overview of the data, typically summarized by measures such as the mean, standard deviation, minimum value, and maximum value (Ghozali, 2021: 19).

Chow Test

The Chow test is employed to determine the more appropriate model between the common and fixed effects models. If the resulting p-value > 0.05, the common effects model is preferred; conversely, if the p-value < 0.05, the fixed effects model is selected.

Hausman Test

The Hausman test is used to determine the more appropriate between the fixed and random effects models. If the resulting p-value > 0.05, the random effects model is preferred; conversely, if the p-value < 0.05, the fixed effects model is selected.

lagrange Multiplier Test

The Lagrange Multiplier (LM) test, specifically the Breusch-Pagan LM test, is used to determine the more appropriate model between the common effects model and the random effects model. If the resulting p-value > 0.05, the common effects model is preferred; conversely, if the p-value < 0.05, the random effects model is selected. According to Septianingsih (2022), if the random effects model is ultimately selected, there is no need to perform classical assumption tests.

T Test

The t-test is used to assess the individual influence of each independent variable in explaining the variation in the dependent variable (Ghozali, 2021: 148). A p-value < 0.05 indicates that the independent variable has a statistically significant effect on the dependent variable in a partial test; conversely, a p-value > 0.05 suggests that the independent variable does not have a statistically significant effect on the dependent variable.

F Test

The F-test is used to determine whether the independent variables, taken together, have a statistically significant effect on the dependent variable. A p-value < 0.05 indicates that the independent variables, considered simultaneously, have a significant effect on the dependent variable (Ghozali, 2022: 148)

Coefficient Determination ($R^{2)}$

The coefficient of determination (R^2) measures the proportion of variance in the dependent variable explained by the model's independent variables. R^2 values range from 0 to 1. A low R^2 value suggests that the independent variables explain only a small proportion of the variation in the dependent variable. Conversely, an R^2 value approaching 1 indicates that the independent variables explain a large proportion of the variation in the dependent variable, implying a strong predictive ability of the model (Ghozali, 2021: 147).

Moderated Regression Analysis Test (MRA Test)

Moderated regression analysis (MRA) is an analytical technique used to assess the moderating effect of a variable on the relationship between an independent variable and a dependent variable while preserving the integrity of the sample (Ghozali, 2021: 258). A p-value < 0.05 indicates that the moderating variable significantly moderates the relationship between the independent and dependent variables; conversely, a p-value > 0.05 suggests that the moderating variable does not significantly moderate this relationship.

Result and Discussion

Descriptive Statistic

Descriptive Statistic Test Table

	Return on A...	Inventory T...	Sales Growth	Board of Co...	Board of Directors
Mean	355.2875	104942.3	1018.000	4.175000	5.212500
Median	374.0000	70584.50	382.0000	3.000000	5.000000
Maximum	2115.000	501964.0	11019.00	10.00000	9.000000
Minimum	-2975.000	359.0000	-8883.000	2.000000	2.000000
Std. Dev.	725.1922	100744.0	3041.593	1.887836	1.907306
Skewness	-1.058602	2.039696	0.634664	1.381625	0.056954
Kurtosis	7.482769	6.919762	5.019859	3.981673	2.005632

Jarque-Bera	81.92591	106.6866	18.97007	28.66412	3.339145
Probability	0.000000	0.000000	0.000076	0.000001	0.188328
Sum	28423.00	8395382.	81440.00	334.0000	417.0000
Sum Sq. Dev.	41546398	8.02E+11	7.31E+08	281.5500	287.3875
Observations	80	80	80	80	80

Source: Data processed by research 2025

The descriptive statistics for each variable are presented below:

1. ROA: The Return on Assets (ROA) variable has a mean of 355.29, a median of 374.00, a maximum of 2115.00, a minimum of -2975.00, and a standard deviation of 725.19.
2. ITO: Inventory Turnover (ITO) has a mean of 104,942.30, a median of 70,584.50, a maximum of 501,964.00, a minimum of 359.00, and a standard deviation of 100,744.00.
3. SG: Sales Growth (SG) has a mean of 1018.00, a median of 382.00, a maximum of 11,019.00, a minimum of -8883.00, and a standard deviation of 3041.59.
4. GCG (Board of Commissioners): Corporate Governance (GCG), as proxied by the Board of Commissioners, has a mean of 4.18, a median of 3.00, a maximum of 10.00, a minimum of 2.00, and a standard deviation of 1.89.
5. GCG (Board of Directors): Corporate Governance (GCG), as proxied by the Board of Directors, has a mean of 5.21, a median of 5.00, a maximum of 9.00, a minimum of 2.00, and a standard deviation of 1.91.

Chow Test

Chow Test Table

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	4.353754	(15,60)	0.0000
Cross-section Chi-square	58.913333	15	0.0000

Source: Data processed by research 2025

Based on the results presented in the table, the p-value for the cross-section F-test is 0.0000, which < 0.05. This indicates that the Fixed Effects Model is preferred over the Common Effects Model. To further differentiate between the Fixed Effects Model and the Random Effects Model, the Hausman test will be conducted.

Hausman Test

Hausman Test Table

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.100765	4	0.8942

Source: Data processed by research 2025

Based on the results presented in the table, the p-value for the cross-section test is 0.8942 > 0.05. This suggests that the Random Effects Model is preferred over the Common Effects Model. To further confirm this preference, the Breusch-Pagan Lagrange Multiplier test will be conducted to compare the Random Effects Model and the Common Effects Model.

Lagrange Multiplier Test

Lagrange Multiplier Test Table

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	23.82825 (0.0000)	9.388999 (0.0022)	33.21725 (0.0000)

Source: Data processed by research 2025

Based on the results presented in the table, the p-value for the Breusch-Pagan test is 0.0000 < 0.05. Therefore, the Random Effects Model is selected.

T-Test

T-Test Table

Dependent Variable:Return on Assets
Method: Panel EGLS (Cross-section random effects)
Date: 05/01/25 Time: 21:48
Sample: 2019 2023
Periods included: 5
Cross-sections included: 16
Total panel (balanced) observations: 80
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	573.3224	162.4673	3.528847	0.0007
Inventory Turnover	-0.002604	0.000880	-2.958526	0.0041
Sales Growth	0.054213	0.020390	2.658847	0.0095

Source: Data processed by research 2025

Based on the results presented in the table, the following are the findings from the t-tests:

1. ITO: The Inventory Turnover (ITO) variable has a coefficient of -0.0026 and a p-value of 0.0041< 0.05. Therefore, it can be concluded that ITO has a statistically significant negative effect on ROA. In other words, an increase in inventory turnover is associated with a decrease in return on assets. This finding suggests that, in the context of this study, a higher inventory turnover rate is detrimental to ROA. A possible explanation for this counterintuitive result is that, as observed in 2020, companies may have prioritized rapid inventory sales to maintain cash flow in response to decreasing CPO prices, even if it meant accepting lower profit margins. This strategy, while boosting ITO, could ultimately lead to reduced profitability and a lower ROA. This situation highlights the importance of considering external factors and industry-specific dynamics when interpreting financial ratios.
2. SG: The Sales Growth (SG) variable has a coefficient of 0.0542 and a p-value of 0.0095 < 0.05. Therefore, it can be concluded that SG has a statistically significant positive effect on ROA. In other words, an increase in sales growth is associated with an increase in return on assets. This finding suggests that higher sales growth leads to improved profitability. This is likely because strong sales growth reflects the company's ability to attract customers and increase revenue, ultimately boosting the bottom line and improving ROA. This positive relationship underscores the importance of effective sales strategies and market positioning for enhancing financial performance."

The resulting regression equation is:

ROA = 573.3224 - 0.002604 * ITO + 0.054213 * SG

This equation can be interpreted as follows:

1. Constant: The constant term of 573.3224 indicates that when all independent variables (ITO and SG) are 0, the expected value of ROA is 573.3224.
2. ITO: The coefficient for ITO is -0.002604. This suggests that for every one-unit increase in Inventory Turnover (ITO), Return on Assets (ROA) is expected to decrease by 0.002604 units, holding all other variables constant.
3. SG: The coefficient for SG is 0.054213. This suggests that for every one-unit increase in Sales Growth (SG), Return on Assets (ROA) is expected to increase by 0.054213 units, holding all other variables constant.

F Test

F Test Table

F-statistic	7.034703	Durbin-Watson stat	1.166377
Prob(F-statistic)	0.001563		

Source: Data processed by research 2025

Based on the results presented in the table, the F-statistic is 7.034703 with a corresponding p-value of 0.001563 < 0.05. Therefore, it can be concluded that the independent

variables in this study, Inventory Turnover (ITO) and Sales Growth (SG), have a statistically significant joint effect on Return on Assets (ROA)

Coefficient Determination ($R^{2)}$

Coefficient Determination Table

R-squared	0.154491	Mean dependent var	158.6431
Adjusted R-squared	0.135230	S.D. dependent var	218.6317

Source: Data processed by research 2025

Based on the results presented in the table, the R-squared value is 0.154491. This indicates that approximately 15.4% of the variation in Return on Assets (ROA) can be explained by the independent variables included in this model, including Inventory Turnover (ITO) and Sales Growth (SG). The remaining 84.6% of the variation in ROA is attributable to other factors not included in this study. This suggests that while ITO and SG have a statistically significant influence on ROA (as indicated by the previous t-tests and F-test), their explanatory power is limited, and other unmeasured variables play a substantial role in determining the ROA of palm oil companies.

Moderated Regression Analysis Test (MRA Test)

Moderated Regression Analysis Test Table

Dependent Variable: Return on Assets
Method: Panel EGLS (Cross-section random effects)
Date: 05/01/25 Time: 21:57
Sample: 2019 2023
Periods included: 5
Cross-sections included: 16
Total panel (balanced) observations: 80
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	618.8482	607.3982	1.018851	0.3117
Inventory Turnover	-0.005722	0.005012	-1.141517	0.2575
Sales Growth	0.021445	0.079137	0.270979	0.7872
Board of Commissioners	-257.2687	129.0000	-1.994330	0.0500
Board of Directors	158.7528	102.3667	1.550825	0.1254
Inventory Turnover*Board of Commissioner	0.003279	0.001397	2.346988	0.0217
Inventory Turnover*Board of Directors	0.001564	0.000962	-1.626004	0.0184
Sales Growth*Board of Commissioners	0.026566	0.016780	1.583169	0.1178
Sales Growth*Board of Directors	-0.011903	0.012263	-0.970619	0.3350

Source: Data processed by research 2025

Based on the results presented in the table, the following are the findings from the MRA tests:

1. ITO and BOC Interaction: The interaction between Inventory Turnover (ITO) and Good Corporate Governance (GCG), as measured by the Board of Commissioners (BOC), is positive and statistically significant. The variable has a coefficient of 0.003279 and a p-

value of 0.0217 < 0.05, indicating that GCG (BOC) significantly moderates the relationship between ITO and Return on Assets (ROA).

2. ITO and BOD Interaction: The interaction between Inventory Turnover (ITO) and Good Corporate Governance (GCG), as measured by the Board of Directors (BOD), is positive and statistically significant. The variable has a coefficient of 0.0001564 and a p-value of 0.0184 < 0.05, indicating that GCG (BOD) significantly moderates the relationship between ITO and ROA.
3. SG and BOC Interaction: The interaction between Sales Growth (SG) and Good Corporate Governance (GCG), proxied by the Board of Commissioners (BOC), is positive but statistically not significant. The variable has a coefficient of 0.026566 and a p-value of 0.1178 > 0.05, suggesting that GCG (BOC) does not significantly moderate the relationship between SG and ROA.
4. SG and BOD Interaction: The interaction between Sales Growth (SG) and Good Corporate Governance (GCG), as measured by the Board of Directors (BOD), is negative and statistically not significant. The variable has a coefficient of -0.019903 and a p-value of 0.3350 > 0.05, suggesting that GCG (BOD) does not significantly moderate the relationship between SG and ROA.

Conclusion

Based on the results and discussion presented, this study offers the following conclusions, acknowledges certain limitations, and proposes recommendations for future research:

1. ITO significantly negatively affects ROA, indicating that although a high inventory turnover rate reflects sales efficiency, factors such as price fluctuations, pandemic conditions, and supply shortages can hinder potential earnings.
2. Sales growth (SG) has a positive and significant effect on ROA, indicating that substantial growth in sales contributes to increased company revenue and net profit.
3. Good Corporate Governance (GCG), as measured by the Board of Commissioners (BOC) and the Board of Directors (BOD), has a positive and significant effect, suggesting that the BOC and BOD can moderate and strengthen the relationship between ITO and ROA.
4. GCG, as measured by the BOC and BOD, does not successfully moderate the relationship between SG and ROA. However, GCG, proxied by the BOC, still contributes positively. This suggests that external factors such as marketing strategies may impact sales growth more than corporate governance.
5. This study has several limitations, including incomplete data and external variables that are difficult to quantify, which may affect the accuracy of the results.
6. Future researchers are encouraged to conduct further studies by considering other external factors that may influence the relationships among the variables examined, such as global economic conditions or government policies related to the palm oil industry.

Declaration of conflicting interest

Authors declare, as the researcher, that this research was conducted with complete independence and integrity, and without any conflict of interest. No financial or non-financial interest of any third party has influenced or biased the results or interpretation of this study

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