



Liquidity, Profitability, and Operating Cash Flow: Their Association with Financial Performance in Indonesia's Food and Beverage Subsector

Andre Arsy Subagja

Telkom University,
INDONESIA

Hilda Salman Said*

Telkom University,
INDONESIA

Article Info	Abstract
Article history: Received: August 9, 2026 Revised: September 26, 2026 Accepted: September 28, 2026 Keywords: Financial Performance; Liquidity; Operating Cash Flow; Profitability.	This study investigates how liquidity, profitability, and operating cash flow relate to the financial performance of food and beverage subsector firms on the Indonesia Stock Exchange (IDX-IC) between 2019 and 2024. A purposive sampling procedure yielded a balanced panel of 52 firms (312 firm-year observations), analyzed in EViews 13 through panel regression with two-way clustered standard errors to correct for heteroskedasticity, serial correlation, and cross-sectional dependence. Model-selection tests pointed to the common effect model (CEM) for the main specification, with fixed effect (FEM) and random effect (REM) models serving as robustness checks. Jointly, the three variables are associated with financial performance (Adjusted $R^2 = 0.543$; $F = 124.19$, $p < 0.001$). At the partial level, only profitability (ROE) shows a positive link, significant at the 10% threshold ($\beta = 0.151$, $p = 0.085$); liquidity and operating cash flow show no significant association. The profitability association held up directionally, and mostly stayed significant, across robustness checks using an alternative profitability measure (gross profit margin), winsorized data, and alternative panel specifications. Overall, profit-generating capacity tracks financial performance more consistently than short-term liquidity or cash generation in this subsector. The study adds subsector-specific evidence on which financial indicators matter most for food and beverage firms, and points company management toward prioritizing profitability, alongside broader indicators such as gross profit margin, without neglecting liquidity and cash flow discipline.

To cite this article: Subagja, A. A., & Said, H. S. (2026). Liquidity, profitability, and operating cash flow: Their association with financial performance in Indonesia's food and beverage subsector. *Smart Society: Community Service and Empowerment Journal*, 6(3), 345-359. <https://doi.org/10.58524/smartsoc.v6i3.1504>

INTRODUCTION

The food and beverage subsector is one of the main subsectors within the consumer non-cyclicals sector on the Indonesia Stock Exchange (IDX) (Bursa Efek Indonesia, 2020). The number of listed issuers in this subsector increased from 30 companies in 2019 to a peak of 95 companies in 2023, before declining to 82 companies in 2024 following a number of delistings (Jiharka, 2026). Part of this increase coincided with the IDX's 2021 revision of its industrial classification system, which replaced JASICA with the IDX Industrial Classification (IDX-IC) and reorganized how listed companies are grouped into subsectors (Arum, 2026; Hartomo, 2021).

This subsector remains one of the largest contributors to the Gross Domestic Product (GDP) of the non-oil and gas processing industry, accounting for 39.10% of that industry's output in 2023 and retaining its position as the largest single contributor as of the second quarter of 2024 (Gappmi, 2023; Tempo.co, 2024), a contribution sustained even as national GDP growth of 5.90% in 2024 has been linked to rising middle-class consumption (Liaturahmi et al., 2025). Because the subsector

*Corresponding author:

Hilda Salman Said, Diponegoro University, INDONESIA. ✉ hildaiid@telkomuniversity.ac.id

© 2026 The Author(s). **Open Access.** This article is under the CC BY SA license (<https://creativecommons.org/licenses/by-sa/4.0/>)

accounts for such a large share of manufacturing output and employment, its companies' ability to sustain liquidity, profitability, and cash generation is directly tied to the inclusive economic growth agenda in Sustainable Development Goal 8 (Decent Work and Economic Growth): firms that cannot sustain these financial conditions are less able to protect employment and contribute stably to that agenda, which is precisely why the determinants examined in this study matter beyond firm-level outcomes.

Despite this economic weight, the food and beverage subsector's growth decelerated sharply during the Covid-19 pandemic, falling from 7.78% in 2019 to 1.58% in 2020 (BPS, 2024). Even so, the subsector's GDP growth remained positive throughout 2019-2024, in contrast to the textile and apparel subsector, whose growth fell from 15.35% in 2019 to -8.88% in 2020 and stayed negative until 2023 (-4.08%, -0.89%, -1.98%), only turning positive again in 2024 (4.26%). This comparison indicates that, relative to other manufacturing subsectors, the food and beverage subsector was comparatively resilient during the pandemic, even as its growth momentum slowed considerably.

This resilience is also reflected in the sample's average ROA, which declined only mildly from 10.0% in 2019 to 8.9% in 2020, before recovering gradually to 9.1% in 2021, holding steady at 8.9% in 2022, and reaching 9.2% and 9.3% in 2023 and 2024, respectively. This mild and short-lived dip in profitability, rather than a prolonged or severe contraction, is broadly consistent with the sector's continued positive GDP growth throughout the period (Astuti & Cahyono, 2024) and mirrors company-level developments, such as PT Mayora Indah Tbk's (MYOR) decline in net profit in 2022 due to rising input costs (Timorria, 2022) and PT Indofood Sukses Makmur Tbk's (INDF) net loss in 2024 despite growing operating profit, driven by foreign exchange losses (Wati, 2025).

Several factors are theoretically linked to a company's financial performance, including liquidity, profitability, and operating cash flow, each of which conveys a distinct type of information to investors under signaling theory (Connelly et al., 2011; Nur et al., 2024; Ross, 1977; Spence, 1973). Liquidity signals a firm's short-term financial discipline: a company able to consistently meet its short-term obligations reduces investors' perceived default risk, which in turn lowers the risk premium investors attach to the firm and can support more favorable valuation (Dirmansyah et al., 2022). Profitability signals managerial effectiveness directly, because it reflects realized returns on the resources managers control, making it one of the most immediate indicators investors use to infer future earnings potential (Nathania et al., 2021). Operating cash flow signals the sustainability of reported earnings: because it is harder to manipulate through accounting discretion than accrual-based profit, strong operating cash flow reassures investors that reported profitability is backed by actual cash generation rather than by timing differences in revenue or expense recognition (Noury et al., 2020; Pratiwi & Sasongko, 2023). Taken together, these three signals are expected to jointly explain variation in financial performance, as each addresses a distinct source of uncertainty investors face when assessing a firm's condition.

Research on the influence of liquidity, profitability, and operating cash flow on financial performance still shows mixed results. Khoza (2025) found that liquidity has a significant and positive effect on financial performance, while Gunawan et al. (2022) found no significant effect; this divergence is consistent with evidence that working capital structure varies considerably across sectors (García-Teruel & Martínez-Solano, 2007) and that the relationship between liquidity and profitability can even run in opposite directions across industries (Diaz & Pandey, 2019), since liquidity's relevance to performance depends on how directly a sector's current assets are tied to profit generation. Regarding profitability, Anggara & Andhaniwati (2023) found a positive effect on financial performance, whereas Ningsih et al. (2023) found none, a divergence consistent with evidence that the choice of profitability proxy can materially change results, as return on equity has even been found to relate negatively to return on assets in some samples (Diaz & Pandey, 2019). For operating cash flow, Li & Terdpaopong (2025) found a significant effect while Sarnawiah et al. (2022) found none, a difference consistent with evidence that the link between cash flow measures and firm performance depends on firm and industry specific operating cycle characteristics, such as inventory and receivables management (Kroes & Manikas, 2014).

These inconsistencies indicate that the relationship between these variables and financial performance is contingent on industry-specific characteristics. Specifically, no prior study has examined liquidity, profitability, and operating cash flow jointly, within a single subsector, over a period spanning both a major economic shock and its recovery, most existing studies examine these

variables individually or pool firms across heterogeneous industries, which conflates industry specific effects with the variables true explanatory power. This leaves open the question of how these three signals jointly behave within one subsector across contrasting economic conditions, which this study addresses in the food and beverage subsector.

Based on this phenomenon and research gap, this study aims to examine the association between liquidity, profitability, and operating cash flow and financial performance, measured through return on assets (ROA), in food and beverage subsector companies listed on the Indonesia Stock Exchange during the 2019-2024 period. The results are expected to contribute to the financial accounting literature and to inform companies and investors in understanding the factors associated with corporate financial performance. Beyond its academic contribution, this study is relevant to the journal's focus on community empowerment and societal impact: because the food and beverage subsector is a major source of manufacturing employment in Indonesia, sustained financial performance among its listed companies directly supports employment stability and, by extension, community welfare in the areas where these companies operate. Financial accounting research that helps identify which financial conditions underpin such performance therefore has practical value for corporate social responsibility and community-oriented decision-making, not only for investors and management.

To clarify the conceptual relationships underlying this study, a conceptual framework is proposed to illustrate how liquidity, profitability, and operating cash flow are expected to be associated with the financial performance of food and beverage subsector companies listed on the Indonesia Stock Exchange during 2019-2024, grounded in signaling theory, as presented in Figure 1.

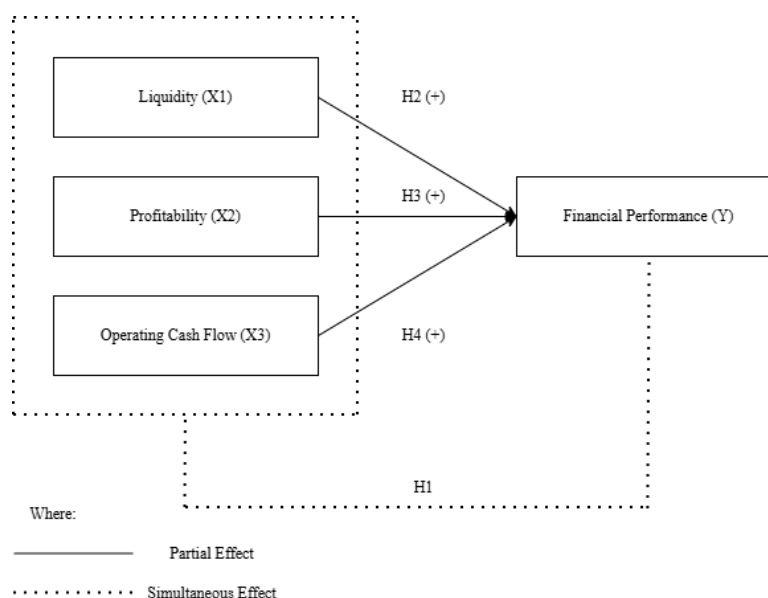


Figure 1. Conceptual Framework

Based on this framework, the following hypotheses are proposed:

H₁: Liquidity, profitability, and operating cash flow are jointly associated with financial performance.

H₂: A firm's liquidity level is associated with its financial performance.

H₃: A firm's profitability level is associated with its financial performance.

H₄: A firm's operating cash flow is associated with its financial performance.

The novelty of this study lies in its integrated examination of liquidity, profitability, and operating cash flow as simultaneous correlates of financial performance within a single subsector over a six-year period spanning both the Covid-19 disruption and the subsector's subsequent recovery. Prior studies have generally examined these variables individually or within mixed industrial samples (Gunawan et al., 2022; Khoza, 2025; Li & Terdpaopong, 2025; Ningsih et al., 2023; Sarnawiah et al., 2022), which conflates cross-industry heterogeneity with the variables' explanatory power and leaves it unclear how these signals behave when industry context is held constant. This study's contribution is twofold: theoretically, it interprets the joint behavior of liquidity, profitability,

and operating cash flow through the lens of signaling theory within a single, economically significant subsector, rather than testing the theory's validity directly; empirically, it provides subsector-specific evidence on which of these financial signals investors can meaningfully rely on, in a setting where prior industry-mixed studies have produced inconsistent conclusions.

METHOD

Research Design

This study employed a quantitative, explanatory research design to examine the association between liquidity, profitability, and operating cash flow and the financial performance of food and beverage subsector companies listed on the Indonesia Stock Exchange (IDX) during 2019-2024. The study is grounded in a positivist paradigm, which assumes that financial phenomena can be objectively measured and tested through statistical analysis. Panel data regression was adopted because the data combine cross-sectional units with repeated observations over six years, which increases the number of observations, allows both between-company and over-time variation to be used, and reduces the risk of drawing conclusions from a single year's conditions (Basuki & Prawoto, 2016).

The data are secondary, drawn from the audited annual financial statements of each sample company for 2019-2024. Statements were obtained from the IDX official website and cross-checked against each company's official website where a report was missing or unclear. For each company-year, the items needed to compute the study variables were extracted manually from the statements of financial position, profit or loss, and cash flows, and then entered into a single panel dataset.

Population and Sample

The population comprises all food and beverage subsector companies listed on the IDX during 2019-2024, totaling 82 companies. Sampling used the purposive sampling method with the following criteria: (1) the company was continuously listed on the IDX throughout 2019-2024; (2) the company published audited annual financial statements for every year of 2019-2024; and (3) the statements provided all the items required to compute the study variables for all six years.

The selection process is summarized in Figure 2. Of the 82 companies, 29 were excluded because they were not listed throughout the entire observation period, and one was excluded because its financial statements were not published for the full period. No company was excluded on the basis of incomplete data, as all remaining companies reported every required item in each year. This left 52 companies and a balanced panel of 312 firm-year observations (52 companies × 6 years).

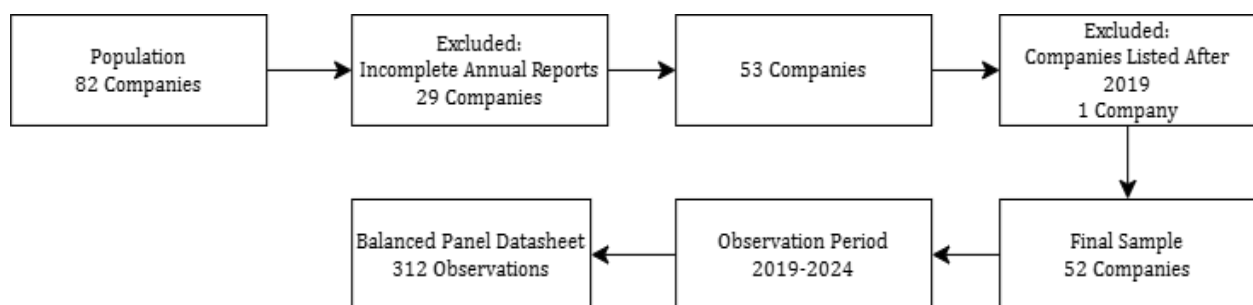


Figure 2. Research Sample Selection Process

Variables and Measurement

The dependent variable is financial performance, proxied by return on assets (ROA). The independent variables are liquidity, proxied by the current ratio (CR); profitability, proxied by return on equity (ROE); and operating cash flow, proxied by the ratio of operating cash flow to current liabilities (OCFCL). All variables were computed from the audited financial statements for 2019-2024, as defined in Table 1.

Table 1. Variable Operationalization

Variable	Proxy	Measurement	Description	Source
Dependent Variable				
Financial Performance	Return on Assets (ROA)	$\frac{\text{Net Income}}{\text{Total Assets}}$	Financial performance indicates the extent to which a company is able to generate profits, as well as the prospects for the sustainability of its operations.	(Cangombe et al., 2025; Majidah & Aryanty, 2022)
Independent Variable				
Liquidity	Current Ratio (CR)	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$	Liquidity is the ability of a company to pay its short-term liabilities on time.	(Pojanavatee & Kingshott, 2025; Zamojska et al., 2025)
Profitability	Return on Equity (ROE)	$\frac{\text{Net Income}}{\text{Common Equity}}$	Profitability is an indicator that measures how effectively a company uses its resources to generate profit.	(Brigham & Houston, 2019; Hapsari et al., 2025)
Operating Cash Flow	Operating Cash Flow to Current Liability (OCFCL)	$\frac{\text{Operating Cash Flow}}{\text{Current Liability}}$	Operating cash flow is the total amount of cash flowing into and out of a company.	(Handayani et al., 2024; Pratiwi & Sasongko, 2023)

ROA and ROE are both earnings-based measures and share net income as their numerator. They differ in the denominator: ROA scales net income by total assets and therefore reflects the efficiency of asset use, whereas ROE scales it by common equity and is therefore also sensitive to capital structure (leverage). Because of this shared numerator, part of the association between ROE and ROA may be mechanical rather than purely economic, and the ROE coefficient should be interpreted with this in mind, consistent with prior evidence of a close relationship between these two measures within the food and beverage subsector specifically (Caronge et al., 2022).

To assess whether the results depend on this feature, a robustness check was conducted in which ROE was replaced by gross profit margin (GPM), calculated as gross profit divided by net sales. Because gross profit is measured before operating expenses, interest, and taxes, GPM does not share net income as its numerator and therefore does not mechanically overlap with ROA. GPM captures a company's ability to convert sales into profit after production costs, which is relevant in the food and beverage subsector, where raw material costs are a major cost component. However, GPM is a narrower measure of profitability than ROE because it excludes operating expenses, financing costs, and taxes; it is therefore used only as an alternative specification rather than a replacement for ROE. The results of this robustness check are reported in the Results section.

Data Analysis Technique

Data were analyzed using descriptive statistics and panel data regression in EViews 13. Before estimation, observations with extreme values, notably the minimum and maximum values of ROE and the maximum value of ROA, were verified against the original audited financial statements. All extreme values were confirmed to reflect the reported figures and were therefore retained in the main model, as they represent actual financial conditions of the sample companies rather than data entry errors. Of the 312 firm-year observations, 68 have a negative ROE, which reflects companies that recorded a net loss in the respective year; these observations are economically meaningful and were retained. Because ROE is not economically interpretable when common equity is negative (a loss combined with negative equity yields a positive ROE), observations with negative equity were identified separately. 6 firm-year observations had negative equity. These observations were retained in the main model as reported, and the main model was re-estimated excluding them to assess the sensitivity of the results. In addition, the main model was re-estimated after winsorizing all continuous variables at the 1st and 99th percentiles to assess the influence of extreme observations on the estimates.

Before model selection, classical assumption tests were conducted. Multicollinearity was assessed using the correlation matrix among the independent variables and the variance inflation factor (VIF), and heteroskedasticity was assessed using the Glejser test. The panel model was selected using three tests. The Chow test compares the common effect model (CEM) with the fixed effect

model (FEM); a probability value below 0.05 favors FEM. The Hausman test compares FEM with the random effect model (REM); a probability value below 0.05 favors FEM, otherwise REM. When the Chow and Hausman results point in different directions, the Lagrange Multiplier (LM) test of Breusch-Pagan is used to compare CEM with REM, with a probability value below 0.05 favoring REM and otherwise CEM. The LM test was evaluated using the cross-section statistic, since the focus is on heterogeneity across companies, and results are also reported for the time and joint ("Both") statistics.

Because panel data may also exhibit serial correlation and cross-sectional dependence, the Durbin-Watson statistic and the Pesaran cross-sectional dependence (CD) test were examined for the selected model. To ensure that inference is robust to heteroskedasticity, within-company serial correlation, and cross-sectional dependence, standard errors were estimated using the two-way clustered (White two-way cluster) method, with clusters defined by both company and year. Hypotheses were tested with the F-test (simultaneous), t-test (partial), and adjusted R^2 , each at the 5% significance level. The main model was re-estimated using GPM in place of ROE, and under FEM and REM specifications, to assess the sensitivity of the results. The regression equation is:

$$ROA_{it} = \alpha + \beta_1 CR_{it} + \beta_2 ROE_{it} + \beta_3 OCFCL_{it} + e_{it}$$

Where ROA_{it} it is return on assets of company i in year t ; CR_{it} it is the current ratio; ROE_{it} is return on equity; $OCFCL_{it}$ is operating cash flow to current liabilities; α is the constant; $\beta_1\beta_2\beta_3$ are regression coefficients; e_{it} is the error term; i indexes companies; and t indexes years.

RESULTS AND DISCUSSION

Result

Summary statistics for the four study variables, drawn from 312 firm-year observations, are reported in Table 2.

Table 2. Descriptive Statistics

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	P1	P99
ROA	0.0726	0.0473	2.7800	-0.5825	0.2169	0.1019	12.4144
CR	2.2674	1.5850	13.4000	0.0300	2.2199	-1.4559	1.4178
ROE	0.0844	0.0955	11.1000	-14.4276	1.0552	-1.5195	2.7576
OCFCL	0.4626	0.2749	5.9453	-3.6828	0.8253	-0.2472	0.6210

The average ROA across the sample sits at 0.0726, with a median of 0.0473; a standard deviation of 0.2169 that exceeds the mean points to substantial dispersion in profitability across the sample firms. The maximum ROA (2.7800) and the range of ROE (from -14.4276 to 11.1000) are extreme relative to the rest of the sample. As noted in the Method section, these values were verified against the audited financial statements and reflect the reported figures; their influence on the estimates is examined through the winsorized re-estimation in Table 9. The maximum ROA of 2.7800, recorded by PT BW Plantation Tbk (BWPT) in 2024, was driven by a decrease in cost of goods sold and operating expenses alongside an increase in operating revenue, reflecting the company's efficiency measures in its operational activities. CR has a mean of 2.2674 and OCFCL a mean of 0.4626, with wide ranges between minimum and maximum values reflecting heterogeneous financial conditions among food and beverage companies during 2019-2024. Pairwise correlations among the three independent variables are set out in Table 3.

Table 3. Multicollinearity Test

Variables	CR	ROE	OCFCL	VIF	Tolerance
CR	1.0000	0.0258	0.5456	1.4084	0.7100
ROE	0.0258	1.000000	0.0707	1.0526	0.9500
OCFCL	0.5456	0.0707	1.000000	1.4285	0.7000

None of the pairwise correlations approaches the conventional 0.90 severe-multicollinearity threshold, the strongest being 0.5456 between CR and OCFCL, well below the 0.90 threshold

commonly used to flag severe multicollinearity. Because pairwise correlations cannot detect multicollinearity involving more than two variables, the variance inflation factor (VIF) was also computed. The VIF values are 1.4084 for CR, 1.0526 for ROE, and 1.4285 for OCFCL, all below the commonly used cut-off of 10 (tolerance values above 0.10), indicating that multicollinearity is not a concern in this study.

Table 4 reports the Glejser test, run by regressing the absolute residuals from the pooled (CEM) regression on the three independent variables; the null (H_0) holds that residual variance is constant, rejected when any regressor's probability falls below 0.05.

Table 4. Results of Heteroskedasticity Test (Glejser Test)

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	0.0308	0.0068	4.5239	0.0000
CR	-0.0021	0.0026	-0.8020	0.4232
ROE	-0.0013	0.0045	-0.2905	0.7717
OCFCL	-0.0015	0.0069	-0.2175	0.8279

None of the three regressors breaches the 0.05 threshold (CR: 0.4232; ROE: 0.7717; OCFCL: 0.8279), so H_0 stands and heteroskedasticity is not indicated. Since pooled residuals can mask group-specific heteroskedasticity in panel settings, the regression's standard errors are additionally computed via the White two-way cluster method, which guards against both heteroskedasticity and within-firm serial correlation.

The Chow test, set out in Table 5, weighs CEM (H_0 : no firm-specific fixed effects) against FEM (H_1).

Table 5. Results of Chow Test

Effects Test	Statistic	d.f.	Prob
Cross-section F	1.4572	(51,257)	0.0319
Cross-section Chi-square	79.2483	51	0.0068

With both the cross-section F and Chi-square probabilities under 0.05 (0.0319 and 0.0068), H_0 is rejected in favor of FEM at this stage, carrying the analysis forward to the Hausman test. Table 6 sets out the Hausman test, which weighs REM (H_0 : firm effects uncorrelated with regressors) against FEM (H_1).

Table 6. Results of Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob
Cross-section random	5.9549	3	0.1138

The cross-section random probability (0.1138) clears the 0.05 bar, so H_0 holds and REM is favored over FEM. Since Chow points toward FEM while Hausman points toward REM, these two results alone cannot settle on a single specification, prompting the Lagrange Multiplier (LM) test to adjudicate between CEM and REM.

The Breusch-Pagan LM test appears in Table 7, testing H_0 (no random effects, CEM holds) against H_1 (REM holds).

Table 7. Results of Lagrange Multiplier Test (Breusch-Pagan)

Test Hypothesis	Cross-section	Time	Both
Breusch-Pagan	2.6820 (0.1015)	2.1960 (0.1384)	4.8779 (0.0272)

Neither the cross-section (0.1015) nor the time (0.1384) component clears the 0.05 bar on its own, so H_0 survives both one-way tests; the joint ("Both") statistic, however, does cross that threshold ($p = 0.0272$). The evidence thus splits: the individual tests do not overturn CEM, while the combined statistic hints at weak joint effects.

Table 8 reports three tests for cross-sectional dependence in the selected model's residuals, each testing H_0 of no such dependence.

Table 8. Results of Cross-Section Dependence Test

Effects Test	Statistic	d.f.	Prob
Breusch-Pagan LM	1882.354	1326	0.0000
Pesaran scaled LM	10.80350		0.0000
Pesaran CD	3.382010		0.0007

Every test clears the 0.05 bar for rejection, pointing to correlated residuals across firms, unsurprising for a panel of same-industry firms exposed to common macro and sector-wide shocks. Paired with the Durbin-Watson statistic's hint of mild serial correlation, this justifies the two-way clustered standard errors used in the next section.

The panel regression, run under CEM with White two-way cluster standard errors (N = 312), is reported across Tables 9 and 10.

Table 9. Results of Data Panel Regression Test

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	0.0555	0.012363	4.489163	0.0065
CR	-0.0013	0.004970	-0.263039	0.8030
ROE	0.1509	0.070536	2.139237	0.0854
OCFCL	0.0160	0.015270	1.046292	0.3433

Table 10. Results of Data Panel Regression Test (Model Statistics)

Observation	312
R ²	0.5474
Adjusted R ²	0.5430
F-statistic	124.1866
Prob(F-statistic)	0.0000
Durbin-Watson Stat	1.5054
Standard errors	White two-way cluster

An adjusted R² of 0.5430 puts 54.3% of ROA's variation down to CR, ROE, and OCFCL jointly, leaving the remaining 45.7% to factors outside the model; the F-test's near-zero probability confirms the three regressors are jointly tied to financial performance. At the partial level, however, none of the three variables is significantly associated with ROA at the 5% level once standard errors are corrected for heteroskedasticity, serial correlation, and cross-sectional dependence: CR is not significantly associated with ROA ($\beta = -0.0013$; $p = 0.8030$), ROE is not significantly associated with ROA at the 5% level, though it is significant at the 10% level ($\beta = 0.1509$; $p = 0.0854$), and OCFCL is not significantly associated with ROA ($\beta = 0.0160$; $p = 0.3433$). The Durbin-Watson statistic of 1.5054 indicates mild positive serial correlation in the residuals, which the two-way clustered standard errors account for directly. Because ROE and ROA share net income as their numerator, part of ROE's apparent partial association with ROA, even at the 10% level, may reflect this mathematical linkage rather than a purely economic relationship; this possibility is examined in Table 11 by replacing ROE with GPM.

Because the model selection procedure was rerun for this specification, with Chow again favoring FEM over CEM (Chi-square = 101.353, $p = 0.0000$) and Hausman not overturning REM (Chi-square = 2.777, $p = 0.4273$), and the LM test's cross-section component proving significant (12.019, $p = 0.0005$), this specification was estimated under REM; results appear in Tables 11 and 12.

Table 11. Robustness Check Using an Alternative Profitability Proxy (GPM)

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	0.004538	0.011765	0.385750	0.7155
CR	-0.006251	0.006409	-0.975338	0.3742
GPM	0.382161	0.081891	4.666715	0.0055
OCFCL	7.10E-06	0.006019	0.001180	0.9991

Table 12. Robustness Check Using GPM (Model Statistics)

Observation	312
R²	0.0855
Adjusted R²	0.0766
F-statistic	0.5959
Prob(F-statistic)	0.000004
Durbin-Watson Stat	0.7973
Standard errors	White two-way cluster

Notably, GPM is positively and significantly associated with ROA at the 1% level ($\beta = 0.3822$; $p = 0.0055$), a stronger and more precisely estimated association than that found for ROE in the main model ($p = 0.0854$). This suggests that the partial association between profitability and financial performance in this sample is not solely an artifact of the mechanical overlap between ROE and ROA, and may in fact be understated when ROE is used as the profitability proxy. CR and OCFCL remain not significantly associated with ROA under this specification ($p = 0.3742$ and $p = 0.9991$).

To gauge whether extreme observations drive the main results, every continuous variable was capped at its 1st and 99th percentiles and the model re-run under the same specification as Tables 9-10; the output is in Tables 13 and 14.

Table 13. Robustness Check After Winsorizing Extreme Values

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	0.038731	0.010995	3.522615	0.0169
CR	-0.000336	0.004194	-0.080176	0.9392
ROE	0.253118	0.041457	6.105479	0.0017
OCFCL	0.018085	0.012739	1.419671	0.2149

Table 14. Robustness Check After Winsorizing Extreme Values (Model Statistics)

Observation	312
R²	0.5420
Adjusted R²	0.5376
F-statistic	121.5138
Prob(F-statistic)	0.0000
Durbin-Watson Stat	0.9391
Standard errors	White two-way cluster

After winsorizing, the results strengthen rather than weaken: ROE remains positively associated with ROA, and its significance improves markedly compared to the main model ($\beta = 0.2531$; $p = 0.0017$, versus $\beta = 0.1509$; $p = 0.0854$ in Table 9). CR and OCFCL remain not significantly associated with ROA ($p = 0.9392$ and $p = 0.2149$, respectively). This indicates that the extreme values identified in the descriptive statistics, including the maximum ROA recorded by BWPT in 2024 and the wide range in ROE, were adding noise that weakened the estimated relationship between ROE and ROA, rather than artificially inflating it. The Durbin-Watson statistic of 0.9391, below the level observed in the main model (1.5054), suggests winsorizing alters the residual autocorrelation structure somewhat, though standard errors remain clustered two-way to account for this.

A further check re-estimates the model under FEM, allowing firm-specific intercepts; given that pairing firm fixed effects with two-way clustering yielded a reduced-rank covariance matrix, standard errors here are clustered by period instead. Tables 15 and 16 report the variables of interest, with firm fixed effects left out for brevity.

Table 15. Robustness Check Under the Fixed Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	0.076171	0.017394	4.379158	0.0072
CR	-0.007325	0.003970	-1.845039	0.1243
ROE	0.141026	0.054415	2.591693	0.0487
OCFCL	0.002589	0.008052	0.321498	0.7608

Table 16. Robustness Check Under the Fixed Effect Model (Model Statistics)

Observation	312
R ²	0.6489
Adjusted R ²	0.5752
F-statistic	8.7978
Prob(F-statistic)	0.0000
Durbin-Watson Stat	1.7927
Standard errors	White cross-section (period cluster)

A final check re-estimates the model under REM with White two-way cluster standard errors, mirroring the main specification; Tables 17 and 18 report the output.

Table 17. Robustness Check Under the Random Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	0.058639	0.010925	5.202642	0.0035
CR	-0.001416	0.004806	-0.294535	0.7802
ROE	0.148673	0.072037	2.063829	0.0940
OCFCL	0.014015	0.014653	0.956467	0.3828

Table 18. Robustness Check Under the Random Effect Model (Model Statistics)

Observation	312
R ²	0.5361
Adjusted R ²	0.5316
F-statistic	118.6235
Prob(F-statistic)	0.0000
Durbin-Watson Stat	1.5789
Standard errors	White two-way cluster

The results are broadly consistent across specifications. Under FEM, ROE remains positively and significantly associated with ROA ($\beta = 0.1410$; $p = 0.0487$). Under REM, ROE remains positively associated with ROA, significant at the 10% level ($\beta = 0.1487$; $p = 0.0940$), consistent with the main model (Table 9: $\beta = 0.1509$; $p = 0.0854$). Across CEM, FEM, and REM, CR and OCFCL remain not significantly associated with ROA in every specification, while ROE's positive association with financial performance is directionally consistent throughout and reaches conventional significance at the 5% level under FEM, and at the 10% level under CEM and REM.

Discussion

Liquidity (CR) is not significantly associated with financial performance ($\beta = -0.0013$; $p = 0.8030$). The negative but non-significant coefficient suggests that variation in liquidity among food and beverage companies during 2019-2024 is not systematically associated with variation in ROA. A plausible explanation is that current assets, the numerator of CR, are dominated by inventory tied to raw material procurement and short production cycles in this subsector, and are largely earmarked to meet short-term obligations rather than to generate additional profit (Sembiring et al., 2024). This finding is consistent with Gunawan et al. (2022) and Ningsih et al. (2023), both of which were also conducted on manufacturing samples with high working-capital intensity, suggesting that the non-

significant liquidity effect may be a structural feature of inventory-driven manufacturing industries rather than a result specific to this sample. This result is consistent with an interpretation, drawn from signaling theory, in which liquidity information alone does not function as a decisive signal of financial performance for this subsector, though investor perceptions themselves were not directly measured in this study.

Profitability (ROE) is positively associated with financial performance, significant at the 10% level ($\beta = 0.1509$; $p = 0.0854$): a one-unit increase in ROE is associated with an approximately 0.15-unit increase in ROA, holding other variables constant. Because ROE and ROA share net income as their numerator, part of this association may reflect this mathematical linkage rather than a purely economic relationship. However, a robustness check using gross profit margin (GPM), a profitability measure that does not share this numerator with ROA, found an even stronger and more precisely estimated positive association ($\beta = 0.3822$; $p = 0.0055$), and the ROE-ROA association itself remained positive and reached conventional significance under several alternative specifications, including winsorized data ($p = 0.0017$) and the fixed effect model ($p = 0.0487$). This pattern suggests that the observed association between profitability and financial performance in this sample is not solely an artifact of the overlap between ROE and ROA. This result is consistent with an interpretation, drawn from signaling theory, in which a higher ROE is associated with returns information that the market can observe, though this study did not directly measure investor response to that information. This finding is broadly consistent with [Anggara & Andhaniwati \(2023\)](#) and [Rafael & Fatihat \(2023\)](#), who also reported a positive association between profitability and financial performance, albeit in mixed-industry samples; a plausible, though untested, explanation for the relatively stronger association observed here is that the food and beverage subsector's comparatively stable consumer demand allows profitability gains to translate more directly into asset returns than in more cyclical sectors.

Operating cash flow (OCFCL) is not significantly associated with financial performance ($\beta = 0.0160$; $p = 0.3433$). Although the coefficient is positive, indicating that higher operating cash flow is directionally associated with higher ROA, the relationship is not statistically significant at the 5% level. A plausible explanation is that operating cash inflows in food and beverage companies are largely allocated to recurring operational needs, such as raw material procurement, rather than to activities that immediately affect reported profitability, consistent with evidence that the link between cash flow measures and firm performance depends on firm- and industry-specific operating cycle characteristics such as inventory management ([Burke & Wieland, 2017](#); [Sarnawiah et al., 2022](#)). The consistency of this result with prior manufacturing-sector studies suggests that operating cash flow may function more as a liquidity buffer than as a direct driver of financial performance in asset-intensive manufacturing settings. This is consistent with an interpretation, drawn from signaling theory, in which operating cash flow information alone does not function as a decisive signal for investors evaluating companies in this subsector, possibly because cash flow statements are reported with a lag relative to earnings-based measures such as ROE; however, this explanation remains speculative, as investor response to this information was not directly measured.

CONCLUSION

This study finds that liquidity, profitability, and operating cash flow are jointly associated with the financial performance of food and beverage subsector companies listed on the IDX during 2019-2024 (F-statistic $p = 0.0000$). At the partial level, only profitability (ROE) shows a positive association with financial performance, significant at the 10% level, while liquidity and operating cash flow do not reach statistical significance. This association was directionally consistent and, in most cases, statistically significant across several robustness checks, including an alternative profitability proxy (GPM), winsorized data, and alternative panel specifications (FEM and REM), suggesting that this finding is not solely driven by the mathematical overlap between ROE and ROA or by extreme observations in the sample.

The main contribution of this study is providing subsector-specific evidence that profitability is more consistently associated with financial performance than liquidity or operating cash flow within the food and beverage subsector, nuancing the common assumption that liquidity and cash flow adequacy uniformly predict performance across industries. This contribution should be read as an empirical association within this subsector and period, rather than as evidence that profitability

functions as a stronger signal in the investor-perception sense, since investor responses to these financial indicators were not directly measured in this study.

This study's main model was estimated using the Common Effect Model (CEM), and the conclusions were checked against the Fixed Effect Model (FEM) and Random Effect Model (REM) as robustness checks; some residual ambiguity in model selection, along with cross-sectional dependence in the residuals, remain acknowledged limitations, as detailed in the Limitation section. Future research is encouraged to examine whether the pattern found here holds in other manufacturing subsectors or over a longer observation period, and to further address the construct overlap between profitability measures and financial performance using data specifically designed to separate the two.

For company management, these findings suggest prioritizing strategies that strengthen overall profitability, such as more efficient asset utilization and cost control, while still maintaining adequate liquidity and prudent cash flow management to support day-to-day operational stability. For investors, profitability indicators deserve closer attention when evaluating food and beverage companies; however, because ROE and ROA are mathematically related, investors and analysts are encouraged to consider profitability alongside a broader set of financial indicators, such as gross profit margin, rather than relying on ROE in isolation, to support more comprehensive, lower-risk investment decisions.

LIMITATION

This study has several limitations. First, it examines only three independent variables, liquidity, profitability, and operating cash flow in explaining financial performance, so 45.7% of the variation in ROA remains associated with factors outside the research model. Second, the research period is limited to 2019-2024, and the sample is limited to food and beverage subsector companies listed on the Indonesia Stock Exchange, so the findings may not be generalizable to other periods or industry sectors.

Third, ROA and ROE share net income as their numerator, so part of the association between them may be mechanical rather than purely economic. Although a robustness check using an alternative profitability proxy (GPM) that does not share this numerator produced a consistent, and indeed stronger, positive association, this construct overlap cannot be fully ruled out as a contributing factor in the main model.

Fourth, although the Chow test rejected the common effect model (CEM) in favor of the fixed effect model (FEM), and the Hausman test favored the random effect model (REM) over FEM, the Lagrange Multiplier test did not provide an unambiguous basis for choosing between CEM and REM; the main model was therefore estimated as CEM, with the conclusions checked against FEM and REM as robustness checks. This residual ambiguity in model selection means that company-specific and time-specific heterogeneity may not be fully captured by the main specification.

Fifth, the residuals of the selected model exhibit statistically significant cross-sectional dependence, indicating that companies in the sample may be jointly exposed to shared industry-wide shocks not fully captured by the model; while two-way clustered standard errors were used to address this in estimating statistical significance, they do not alter the underlying model specification. Sixth, as with most studies using this research design, the possibility of endogeneity arising from reverse causality between financial performance and its determinants, or from omitted variables correlated with both cannot be fully ruled out, and the associations reported in this study should accordingly be interpreted as associative rather than causal.

ACKNOWLEDGMENT

The authors would like to express their sincere gratitude to the Faculty of Economics and Business, Universitas Telkom, for the academic support extended during the completion of this study.

Appreciation is further extended to the Indonesia Stock Exchange for providing open access to the audited financial reports that served as the primary data source of this research.

REFERENCES

- Anggara, I. F., & Andhaniwati, E. (2023). Pengaruh Likuiditas, Leverage, dan Profitabilitas terhadap Kinerja Keuangan PT. Semen Indonesia (Persero) Tbk. *Ekonomis: Journal of Economics and Business*, 7(1), 366–371. <https://doi.org/10.33087/ekonomis.v7i1.780>
- Arum, R. (2026, May 12). *Klasifikasi IDX-IC: Pengertian, Perbedaan dengan JASICA, Daftar Sektor, dan Contoh Saham*. Investasiku.Id.
- Astuti, F. A., & Cahyono, Y. T. (2024). Analisis Laporan Keuangan Sebelum, Selama, dan Sesudah Pandemi Covid-19 untuk Mengukur Kinerja Keuangan (Studi Empiris pada Perusahaan Sub-Sektor Makanan dan Minuman yang Terdaftar di Bursa Efek Indonesia Tahun 2019-2021). *Management Studies and Entrepreneurship Journal*, 5(1), 2984–2992. <https://doi.org/10.37385/msej.v5i1.4424>
- Basuki, A. T., & Prawoto, N. (2016). *Analisis Regresi dalam Penelitian Ekonomi dan Bisnis: Dilengkapi Aplikasi SPSS dan EViews* (1st ed.). Rajawali Pers.
- BPS. (2024). *Produk Domestik Bruto Indonesia Triwulanan 2020–2024*.
- Brigham, E. F., & Houston, J. F. (2019). *Fundamentals of Financial Management* (15th ed.). Cengage Learning.
- Burke, Q. L., & Wieland, M. M. (2017). Value Relevance of Banks Cash Flows from Operations. *Advances in Accounting*, 39, 60–78. <https://doi.org/10.1016/j.adiaac.2017.08.002>
- Bursa Efek Indonesia. (2020). *Panduan IDX Industrial Classification Versi 1.0 (Desember 2020)*.
- Cangombe, E. L., Almeida, L. G., & Tavares, F. O. (2025). Determinants of Banking Profitability in Angola: A Panel Data Analysis with Dynamic GMM Estimation. *Risks*, 13(7), 1–21. <https://doi.org/10.3390/risks13070123>
- Caronge, E., Raznilawati, & Mursida. (2022). Pengaruh Return on Asset dan Return on Equity terhadap Distress pada Perusahaan Manufaktur Sub-Sektor Makanan dan Minuman yang Terdaftar di Bursa Efek Indonesia Periode 2014-2017. *Jurnal Penelitian Humano*, 13(2), 15–26. <https://doi.org/10.33387/humano.v13i1.4263>
- Connelly, B. L., Certo, S. T., Ireland, R. D., & Reutzel, C. R. (2011). Signaling Theory: A Review and Assessment. *Journal of Management*, 37(1), 39–67. <https://doi.org/10.1177/0149206310388419>
- Diaz, J. F., & Pandey, R. (2019). Factors Affecting Return on Assets of US Technology and Financial Corporations. *Jurnal Manajemen Dan Kewirausahaan*, 21(2), 134–144. <https://doi.org/10.9744/jmk.21.2.134-144>
- Dirmansyah, N. O., Syalsabila, L., & Lestari, H. S. (2022). Pengaruh Likuiditas terhadap Kinerja Perusahaan pada Perusahaan yang Terdaftar di BEI. *Jurnal Ekonomi*, 27(1), 49–63. <https://doi.org/10.24912/je.v27i1.854>
- Gappmi. (2023, April 3). *Siaran Pers GAPMMI Bersama Ditjen Industri Agro Kementerian Perindustrian Partisipasi Industri Makanan Minuman Indonesia di Pameran Hannover Messe 2023*. Gappmi.Id.
- García-Teruel, P. J., & Martínez-Solano, P. (2007). Effects of Working Capital Management on SME Profitability. *International Journal of Managerial Finance*, 3(2), 164–177. <https://doi.org/10.1108/17439130710738718>
- Gunawan, C., Sudarsi, S., & Aini, N. (2022). Pengaruh Likuiditas, Struktur Modal, Ukuran Perusahaan dan Risiko Operasional Perusahaan terhadap Kinerja Keuangan Perusahaan pada Industri Manufaktur yang Terdaftar di Bursa Efek Indonesia pada Tahun 2018-2020. *Dinamika Akuntansi, Keuangan Dan Perbankan*, 11(1), 31–40. <https://doi.org/10.35315/dakp.v11i1.8951>
- Handayani, R. S., Nurfitriani, & Huda, M. M. (2024). Analisis Laporan Arus Kas dalam Menilai Kinerja Keuangan pada PT Bumi Serpong Damai Tbk Tahun 2021-2023. *Jurnal Akuntansi Dan Keuangan*, 13(1), 26–32. <https://doi.org/10.32520/jak.v13i1.3623>
- Hapsari, D. W., Budiharjo, R., Pratomo, D., & Yazid, H. (2025). Profitability in Linking Governance Structure and Firm Value. *Jurnal Akuntansi*, 29(2), 206–224. <https://doi.org/10.24912/ja.v29i2.2421>

- Hartomo, G. (2021, January 27). *BEI Beberkan Perbedaan IDX-IC dengan JASICA*. Okezone.Com.
- Jiharka, A. (2026, February 9). *Masa Ujung Tanduk 70 Emiten, BEI Sebut Delisting Lumrah bagi Mereka*. Emitennews.Com.
- Khoza, F. (2025). The Impact of Liquidity and Leverage on the Financial Performance of the Johannesburg Stock Exchange-Listed Consumer Goods Firms. *Journal of Risk and Financial Management*, 18(9), 1–24. <https://doi.org/10.3390/jrfm18090510>
- Kroes, J., & Manikas, A. (2014). Cash Flow Management and Manufacturing Firm Financial Performance: A Longitudinal Perspective. *International Journal of Production Economics*, 148, 37–50. <https://doi.org/10.1016/j.ijpe.2013.11.008>
- Li, J., & Terdpaopong, K. (2025). Factors Influencing the Financial Performance Strategy of Healthcare Listed Companies During the Covid-19 Pandemic. *Corporate and Business Strategy Review*, 6(3), 64–73. <https://doi.org/10.22495/cbsrv6i3art6>
- Liaturahmi, N., Wirahendri, & Zahrah. (2025). Determinan Tingkat Pengembalian Investasi pada Perusahaan Makanan dan Minuman yang Terdaftar di Bursa Efek Indonesia. *Jurnal Aplikasi Perpajakan*, 6(1), 331–346. <https://doi.org/10.29303/jap.v6i1.135>
- Majidah, M., & Aryanty, N. (2022). Financial Performance: Environmental Performance, Green Accounting, Green Intellectual Capital, Green Product, & Risk Management. *Proceedings of the 5th European International Conference on Industrial Engineering and Operations Management*, 2928–2938. <https://doi.org/10.46254/EU05.20220569>
- Nathania, C., Wijaya, S., Hutagalung, G., & Simorangkir, E. N. (2021). The Influence of Company Size and Leverage on Tax Avoidance with Profitability as Intervening Variable at Mining Company Listed in Indonesia Stock Exchange Period 2016-2018. *International Journal of Business, Economics and Law*, 24(2), 132–140.
- Ningsih, A. M., Hardiwinoto, Ridwan, M., & Putri, A. P. R. Z. (2023). Analisis Rasio Likuiditas, Solvabilitas, Aktivitas, dan Profitabilitas untuk Menilai Kinerja Keuangan pada Perusahaan Food and Beverage Yang Terdaftar di Bursa Efek Indonesia Tahun 2019-2021. *Kompartemen: Jurnal Ilmiah Akuntansi*, 21(1), 94–110. <https://doi.org/10.30595/kompartemen.v21i1.15829>
- Noury, B., Hammami, H., Ousama, A. A., & Zeitun, R. (2020). The Prediction of Future Cash Flows Based on Operating Cash Flows, Earnings and Accruals in the French Context. *Journal of Behavioral and Experimental Finance*, 28, 1–11. <https://doi.org/10.1016/j.jbef.2020.100414>
- Nur, S., Suciyanti, V. N., Winarti, A., & Azmi, Z. (2024). Pemanfaatan Teori Signal dalam Bidang Akuntansi: Literatur Review. *Economics, Business and Management Science Journal*, 4(2), 55–65. <https://doi.org/10.34007/ebmsj.v4i2.564>
- Pojanavatee, S., & Kingshott, R. (2025). Liquidity and Leverage on the Financial Performance of Savings and Credit Cooperatives in the Emerging Thailand Market. *Journal of Indian Business Research*, 17(1), 66–82. <https://doi.org/10.1108/JIBR-10-2024-0221>
- Pratiwi, A. D., & Sasongko, N. (2023). Pengaruh Likuiditas, Operating Capacity, Sales Growth, Operating Cash Flow dan Kepemilikan Institusional terhadap Financial Distress (Studi Empiris pada Perusahaan Manufaktur Sektor Barang Konsumsi yang Terdaftar di Bursa Efek Indonesia Tahun 2019-2022). *Management Studies and Entrepreneurship Journal*, 4(6), 8878–8890. <https://doi.org/10.37385/msej.v4i6.3653>
- Rafael, F. M., & Fatihat, G. G. (2023). Analisis Likuiditas, Solvabilitas, dan Profitabilitas terhadap Kinerja Keuangan Perusahaan Bank Central Asia (BCA) Periode 2017-2021. *Cakrawala Repositori IMWI*, 6(1), 641–647. <https://doi.org/10.52851/cakrawala.v6i1.256>
- Ross, S. A. (1977). The Determination of Financial Structure: The Incentive Signaling Approach. *The Bell Journal of Economics*, 8(1), 23–40. <https://doi.org/10.2307/3003485>
- Sarnawiah, Alam, S., Kadir, N., & Reni, A. (2022). The Influence of Operating Cash Flows and Financing Cash Flows on Financial Performance Through Earnings Quality as an Intervening Variable at The Indonesian Telecommunications Company Listed on The Indonesia Stock Exchange. *Journal of Research in Business and Management*, 10(12), 141–152.
- Sembiring, S., Shalini, W., Mahendra, A., & Parhusip, P. T. (2024). Pengaruh Ukuran Perusahaan, Struktur Modal, dan Likuiditas terhadap Kinerja Keuangan pada Perusahaan Pertambangan yang Terdaftar di BEI Periode 2020-2022. *Jurnal Riset Akuntansi Dan Keuangan*, 10(2), 158–171.

- Spence, M. (1973). Job Market Signaling. *The Quarterly Journal of Economics*, 87(3), 355–374. <https://doi.org/10.2307/1882010>
- Tempo.co. (2024, September 4). *Industri Makanan dan Minuman Tumbuh 5,53 Persen, Beri Sumbangan Terbesar ke PDB*. Tempo.Co. <https://www.tempo.co/ekonomi/industri-makanan-dan-minuman-tumbuh-5-53-persen-beri-sumbangan-terbesar-ke-pdb--12737>
- Timorria, I. F. (2022, May 4). *Penyebab di Balik Laba Bersih Mayora Indah (MYOR) Turun 62 Persen*. Bisnis.Com.
- Wati, Y. (2025, March 26). *Catatkan Rugi Bersih Tinggi, Indofood Hadapi Tantangan Berat*. Kabarbursa.Com.
- Zamojska, A., Mosionek-Schweda, M., Tłoczyński, D., & Diakowska, K. (2025). Crisis, Support, and Structural Risk: Assessing the Financial Impact of Covid-19 on Polish Regional Airports. *Risks*, 13(9), 1–24. <https://doi.org/10.3390/risks13090175>