



Factors Affecting Company Profitability of Food and Beverage Companies Listed on the Indonesia Stock Exchange (2021–2025)

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Abstract

Background: Corporate profitability indicates how successfully a company converts its assets, capital, and other resources into earnings. Within the food and beverage manufacturing industry, this performance may depend on the efficiency of asset utilization, financing decisions, technological capability, composition of assets, organizational scale, and managerial characteristics. Examining these determinants is therefore necessary to support sound corporate decision-making.

Objective: This research examines the determinants of profitability among food and beverage manufacturing companies listed on the Indonesia Stock Exchange (IDX) throughout the 2021–2025 period.

Methods: A quantitative, causal design was applied to food and beverage manufacturing firms listed on the IDX from 2021 to 2025. Purposive sampling produced a sample of 42 firms and 210 firm-year observations. The panel data were estimated in EViews 12. Return on Assets (ROA) and Return on Equity (ROE) represented profitability. The explanatory variables were Fixed Asset Turnover (FAT), Financial Leverage (FL), Technological Innovation (TI), Current Asset to Total Asset Ratio (CATA), Firm Size (SIZE), and Gender of Management (GEND).

Results: FAT is positively significant for ROA but is not significant for ROE. FL is negatively associated with both ROA and ROE, whereas TI and CATA show significant positive associations with the two profitability indicators. SIZE has a significant negative relationship with both ROA and ROE. GEND is not significant for ROA but has a significant negative relationship with ROE.

Conclusion: Profitability is supported by technological innovation and productive asset management, whereas greater leverage and company scale are associated with lower profitability in the observed firms.

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INTRODUCTION

Manufacturing firms support economic development by transforming inputs into higher-value products, creating employment, improving productivity, and contributing to national output. Their financial performance consequently depends on the ability to operate efficiently and remain competitive (Baby et al., 2024). Within Indonesian manufacturing, the food and beverage (F&B) subsector is especially important. It has consistently accounted for more than 38% of the GDP generated by the non-oil and gas processing industry in recent years. The subsector also

creates employment, raises domestic value added, and supports exports. Its comparatively resilient performance and sustained demand have therefore made it a principal source of growth for Indonesian manufacturing (Tamin et al., 2024).

Profitability captures the extent to which a firm can deploy its resources to earn income from operations. Strong profitability suggests that assets, capital, and technology are being used productively to generate durable economic value. Improving this outcome is therefore central to manufacturing firms because it sustains their operations while reinforcing industrial competitiveness and economic contribution (Setyadi et al., 2025).

UNIDO data indicate that manufacturing continued to generate approximately 16% of global GDP in 2024. Nevertheless, producers face pressure on earnings from higher production and financing costs as well as growing requirements for technology investment. A similar issue is evident in Indonesia: BPS data show that the processing industry contributed approximately 18–19% of national GDP in 2024–2025, although manufacturers' profit growth did not necessarily keep pace with asset expansion and digitalization. Nguyen and Pham (2026) identify fixed-asset turnover, financial leverage, and technological innovation among the factors that may explain profitability.

Fixed Asset Turnover (FATO) reflects how productively investments in property, plant, and equipment are converted into sales. This issue is particularly relevant to manufacturers because machinery and production facilities constitute essential operating resources. A higher ratio indicates that a firm generates more revenue from a given fixed-asset base and may therefore achieve stronger profitability (Dincă & Akomeah, 2026). Şahin and Mohamed (2025) likewise report that improved asset turnover strengthens financial performance by increasing the income generated from assets. Consistent evidence from Ike and Ijeoma (2025) suggests that effective asset management can raise returns without requiring disproportionate additions to fixed investment.

The profitability implications of debt depend on how financing is managed. Dangs et al. (2026) argue that external funds can support operations and improve returns when leverage is maintained at an appropriate level. Conversely, Bousbaa (2026) reports that greater leverage generally reduces ROA because financial risk and debt-service commitments can constrain operating efficiency. Brozović et al. (2025) similarly identify leverage as an important determinant of both ROA and ROE.

Technological innovation facilitates digital transformation, strengthens evidence-based decisions, and improves an organization's ability to respond to changing business conditions (Martínez-Peláez et al., 2024). Zheng (2025) finds that digital transformation and innovation enhance profitability by increasing efficiency and reinforcing competitive advantage. Billi and Bernardo (2025) also show that information-technology innovation and digital-transformation strategies can improve corporate performance, including profit margins.

Ahmed and Hamad (2026) report that liquidity, measured through the Current Asset to Total Asset Ratio, is positively associated with ROA and ROE. Their finding indicates that the share of cash, receivables, and other current assets within total assets can shape financial outcomes. Building on this evidence, the present research includes CATA as an explanatory variable. Its inclusion extends the model by examining whether the composition of liquid assets helps explain the profit-generating capacity of Indonesian food and beverage manufacturers.

Differences in earlier findings, together with the limited evidence from models that jointly consider fixed-asset turnover, financial leverage, technological innovation, CATA, firm size, and managerial gender, establish the research gap addressed here. Accordingly, this study provides integrated empirical evidence on the determinants of profitability among food and beverage manufacturing companies listed on the Indonesia Stock Exchange.

Profitability describes a firm's capacity to earn income by employing its operating resources efficiently. It indicates how successfully management converts assets, equity, and sales into returns. Higher profitability generally signals stronger financial performance and a greater capacity to sustain operations and provide returns to shareholders (Damayanty et al., 2022; Hernandez et al., 2024).

Fixed Asset Turnover (FATO) measures the sales generated by each unit of investment in fixed assets. A larger ratio indicates that property, plant, and equipment are being used more

intensively to produce revenue and therefore reflects stronger operating efficiency (Prastiwi et al., 2024).

Financial leverage refers to the use of debt financing in a firm's asset and operating structure. Although borrowing may amplify shareholder returns when invested productively, it also creates mandatory interest and principal payments and consequently increases financial risk (Odhiambo et al., 2025).

Technological innovation encompasses the creation, adoption, or improvement of technologies, production processes, and products intended to strengthen organizational efficiency, productivity, and competitiveness. Its business application may improve output quality, lower operating costs, and generate value that supports a sustainable competitive position (Zou et al., 2024). The Current Asset to Total Asset Ratio (CATA) expresses current assets as a proportion of a firm's total assets. It therefore indicates how much of the asset base consists of resources that are liquid or expected to be converted into cash in the short term. A higher CATA denotes a larger liquid component within the overall asset structure (Firdaus & Wardana, 2026).

Firm size represents the scale of a business and is commonly proxied by total assets, sales, or employment. Larger firms ordinarily control more resources, conduct broader operations, and may have greater access to external finance, although scale does not automatically guarantee superior performance (Čečević et al., 2026).

Gender of Management concerns the representation of women and men in managerial and board positions. A more balanced composition can broaden the perspectives available in strategic deliberation and may influence the quality of corporate oversight and decision-making (Yahaya, 2025).

The framework links profitability, measured by ROA and ROE, with six firm-level determinants. Nguyen and Pham (2026) associate efficient fixed-asset utilization with profitability, while Lee (2024) relates technological innovation to faster capital turnover, stronger sales returns, and lower operating costs. Ahmed and Hamad (2026) show that the current-asset share can influence ROA and ROE, indicating that the composition and management of liquid assets matter for earnings. Leverage may reduce profitability when debt costs become excessive Listy and Imronudin (2026), whereas firm scale can provide resource access and operating efficiencies (Dincă & Akomeah, 2026). Management gender diversity may also affect oversight and strategic decisions (J. et al., 2025). These relationships provide the basis for testing the six explanatory variables against corporate profitability in the proposed model.

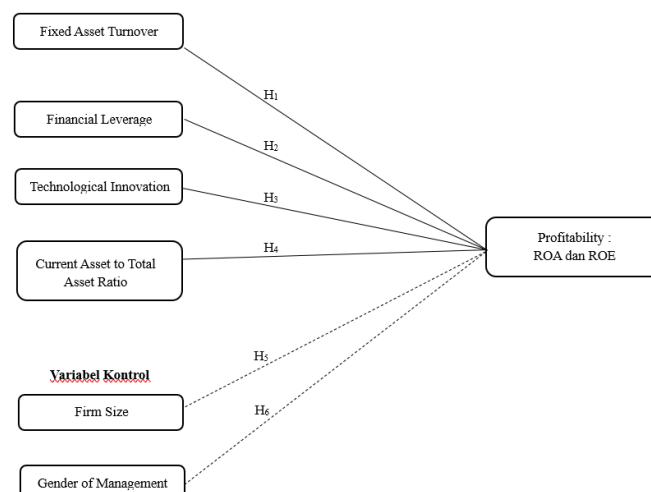


Figure 1. Conceptual Framework

Hypothesis Development

The Effect of Fixed Asset Turnover on Company Profitability

Nguyen and Pham (2026) associate higher fixed-asset turnover with more effective use of productive assets. Karim et al. (2025) similarly find a significant positive relationship between asset turnover and ROA, while Azhari et al. (2026) document a positive profitability effect in

energy-sector firms. On this basis, the following hypothesis is proposed:

H1: Fixed Asset Turnover Affect the Company's Profitability

The Effect of Financial Leverage on Company Profitability

Listy and Imronudin (2026) report a significant negative relationship between financial leverage and ROA. Omega and Simanungkalit (2026) explain that fixed interest obligations restrict cash flow and erode earnings, particularly under volatile market conditions. Aljundi et al. (2024) provide comparable evidence: heavier debt use increases financing costs and risk, thereby limiting the firm's capacity to generate returns from its assets. The following hypothesis is therefore formulated:

H2: Financial Leverage Affect the Company's Profitability

The Influence of Technological Innovation on Company Profitability

Nguyen and Pham (2026) show that firms adopting technological innovation strategically attain stronger ROA and ROE than non-innovative firms. Lee (2024) links innovation to quicker capital turnover, higher sales returns, lower operating costs, and additional product value. Zheng (2025) further demonstrates that digital technology can streamline processes, reduce transaction costs, and improve data-informed decisions. These mechanisms are expected to strengthen overall profitability; hence, the hypothesis is stated as follows:

H3: Technological Innovation Affect the Company's Profitability

The Effect of Current Asset to Total Asset Ratio on Company Profitability

Lasmo and Hariyanto (2025) identify current-asset management as a determinant of profitability among IDX-listed manufacturers. The proportion must nevertheless remain efficient because an excessive balance may produce idle cash and reduce returns on capital. Ahmed and Hamad (2026) find that CATA is positively related to both ROA and ROE, while Umoh (2024) attributes stronger financial performance to effective management of cash, receivables, and inventories. Accordingly, the following hypothesis is advanced:

H4: Current Asset to Total Asset Ratio Affect the Company's Profitability

The Influence of Firm Size on Company Profitability

Febrianti and Hasibuan (2025) find that firm size is positively associated with earning capacity, reflecting economies of scale, stronger supplier bargaining power, and access to less costly capital. Dincă and Akomeah (2026) likewise connect larger scale with greater tangible and intangible resources and wider financing access. Karim et al. (2025) report positive relationships between size and both ROA and ROE because larger firms may manage resources more efficiently. This evidence leads to the following hypothesis:

H5: Firm Size Affect the Company's Profitability

The Influence of Gender of Management on Company Profitability

Diversity in top-management characteristics with stronger financial performance through more effective oversight (Seow, 2026). Female representation may broaden strategic evaluation, moderate risk-taking, and reduce agency costs. Gaio et al. (2024) conclude that much of the literature links women's participation with returns, risk, capital costs, and fraud outcomes, while Younus et al. (2025) report a positive association between board gender diversity and performance. The hypothesis is therefore formulated as follows:

H6: Gender of Management Affect the Company's Profitability.

METHOD

This study employed a quantitative causal design to assess whether asset efficiency, financial structure, technological innovation, asset composition, company size, and managerial characteristics explained corporate profitability. Profitability was represented by ROA and ROE, with firm size included in the model as specified. The population comprised food and beverage manufacturing companies listed on the Indonesia Stock Exchange during 2021–2025. Purposive sampling yielded 42 eligible firms, resulting in 210 firm-year observations. Panel regression

analysis was conducted using EViews 12. Model selection considered the Common Effect Model, Fixed Effect Model, and Random Effect Model before the hypotheses were evaluated. The operational definitions and measurements of the variables are presented in Table 1.

Table 1*Variable measurement (FAT explained)*

Variable Type	Variable Name	Symbols	Formula	Source
Dependent Variable	<i>Return on Assets</i>	ROA	$\frac{\text{Net Income}}{\text{Total Assets}}$	Nguyen and Pham (2026); Ahmed and Hamad (2026)
	<i>Return on Equity</i>	ROE	$\frac{\text{Net Income}}{\text{Total Equity}}$	Nguyen and Pham (2026); Ahmed and Hamad (2026)
Independent Variables	<i>Fixed Asset Turnover</i>	FAT	$\frac{\text{Sales}}{\text{Average Fixed Assets}}$	Pavic Kramaric et al., (2017)
	<i>Financial Leverage</i>	FL	$\frac{\text{Total Debt}}{\text{Total Assets}}$	Listy and Imronudin (2026); Omega and Simanungkalit (2026)
	<i>Technological Innovation</i>	TI	$\frac{\text{R\&D Expenses}}{\text{Total Sales}}$	Wani and Dar, (2015); Sylos Labini et al. (2025)
	<i>Current Assets to Total Asset Ratio</i>	CATA	$\frac{\text{Total Current Assets}}{\text{Total Assets}}$	Ahmed and Hamad (2026); Lasmo and Hariyanto (2025)
Control Variables	<i>Firm Size</i>	Size	In (Total Assets)	Dincă and Akomeah (2026); Febrianti and Hasibuan (2025)
	<i>Gender of Management</i>	GEND	Ratio of number of female directors to total directors	Faldi et al. (2023)

Based on the conceptual framework that was compiled, the equation model used is as follows:

$$\text{ROA} = \alpha + \beta_1 \text{FATit} + \beta_2 \text{FLit} + \beta_3 \text{TIit} + \beta_4 \text{CATAit} + \beta_5 \text{SIZEit} + \beta_6 \text{GENDit} + \varepsilon$$

$$\text{ROE} = \alpha + \beta_1 \text{FATit} + \beta_2 \text{FLit} + \beta_3 \text{TIit} + \beta_4 \text{CATAit} + \beta_5 \text{SIZEit} + \beta_6 \text{GENDit} + \varepsilon$$

Description:

ROAit	= Return on assets Company I in Year T
ROEit	= Return on Equity Company I in Year T
FATit	= Fixed Assets Turnover
FLit	= Financial Leverage
TIit	= Technological Innovation
CATAit	= Current Assets to Total Asset Ratio
SIZEit	= Firm Size
GENDit	= Gender of Management
Eit	= Error Term

The Chow test compares the Common Effect Model (CEM) with the Fixed Effect Model (FEM). The Hausman test subsequently distinguishes between the FEM and Random Effect Model (REM), whereas the Lagrange Multiplier test compares the CEM and REM.

The Chow test is a test used to select the best approach between the Common Effect Model (CEM) approach model and the Fixed Effect Model (FEM). Meanwhile, Hausman is a test used to select the best approach between the Random Effect Model (REM) approach model with the Fixed Effect Model (FEM) and the Lagrange multiplier test is a test used to choose the best approach between the Common Effect Model (CEM) approach model and the Random Effect Model (REM).

Table 2 reports the panel-model selection results. For ROE and ROA, the Chow-test probabilities are 0.0001 and 0.0000, respectively; both are below 0.05 and initially favor FEM over CEM. The Hausman probability for ROE is 0.1570, supporting REM, whereas the ROA probability is 0.0188 and therefore supports FEM. For ROE, the LM probability of 0.0127 further favors REM over CEM. Taken together, these tests indicate that ROE should be estimated with REM and ROA with FEM.

Table 2

Model selection

Remarks	ROE	ROA
Chow Test	0.0001	0.0000
Verdict	Fixed Effect	Fixed Effect
Hausman Test	0.1570	0.0188
Verdict	Random Effect	Fixed Effect
LM Test	0.0127	0.0000
Verdict	Random Effect	Random Effect

Source: Eviews 12 processing results

For both models, the probability of the F-statistic is below 0.05. The independent variables are therefore jointly significant in explaining each profitability measure.

The results of the simultaneous test showed that the Prob (F-Statistic) value on Model 1 and Model 2 was < 0.05 , then H_a was accepted. Hence, all independent variables simultaneously have a significant influence on dependent variables.

Table 3

F test

Remarks	ROA	ROE
F statistics	36.68348	20.35927
Prob F statistics	0.000000	0.000000

Source: Eviews 12 processing results

Determination Coefficient Test (R Square)

The results of the determination coefficient test showed that the R-Square value in Model 1 was 0.91, which means that all independent variables were able to predict dependent variables by 91%, while the remaining 9% were predicted by variables outside the model. The R-Square value in Model 2 is 0.37, which means that all independent variables are able to predict dependent variables by 37%, while the remaining 63% are predicted by other variables outside the model.

Table 4

Coefficient of determination

Remarks	ROA	ROE
R-Square	0.914110	0.375684
Adj R-Square	0.889191	0.357231

Source : Eviews 12 processing results

RESULTS AND DISCUSSION

Results

The analysis uses profitability as the dependent construct and evaluates asset efficiency, financial structure, technological innovation, asset composition, firm size, and managerial gender as explanatory factors. Descriptive statistics for the 210 firm-year observations are reported in Table 5.

The variables used in this study are independent variables consisting of asset efficiency, financial structure, technological innovation, and managerial characteristics to the dependent variable, namely company profitability. Company size is used as a control variable to reinforce the research model. The following are the results of descriptive statistics from the data used in this study.

Table 5 summarizes 210 firm-year observations. ROA ranges from -0.948899 for Indofarma Tbk in 2023 to 0.943566 for Prasadha Aneka Niaga Tbk in 2023, with a mean of 0.063338 and a standard deviation of 0.160339, indicating considerable dispersion in asset-based returns. ROE varies from -1.105553 for Sentra Food Indonesia Tbk in 2024 to 2.169979 for Prasadha Aneka Niaga Tbk in 2023; its mean is 0.055579 and standard deviation is 0.945565. FATO has a minimum of 0.096097 for Prasadha Aneka Niaga Tbk in 2025 and a maximum of 38.41283 for Wilmar Cahaya Indonesia Tbk in 2025, while its mean and standard deviation are 4.025089 and 4.553635. FL ranges from 0.085905 for Siantar Top Tbk in 2025 to 2.851896 for Indofarma Tbk in 2024, with a mean of 0.480670 and standard deviation of 0.340803, reflecting differences in debt intensity across firms. TI records a minimum of 0.000013 for Darya-Varia Laboratoria Tbk in 2025 and a maximum of 0.528307 for Indofarma Tbk in 2025. Its mean of 0.016935 and standard deviation of 0.063884 suggest generally limited innovation expenditure with substantial cross-firm variation. CATA extends from 0.052761 for Estika Tata Tiara Tbk in 2023 to 1.364493 for Multi Bintang Indonesia Tbk in 2023; the mean is 0.488260 and the standard deviation is 0.203180, showing heterogeneous current-asset structures. SIZE ranges from 7.205372 for Unilever Indonesia Tbk in 2024 to 14.33842 for Indofood Sukses Makmur Tbk in 2025, with a mean of 12.21762 and standard deviation of 1.386669. Finally, GEND varies from 0.083333 for Indofood CBP Sukses Makmur Tbk in 2025 to 0.833333 for Ultrajaya Milk Industry & Trading Company Tbk in 2024. Its mean of 0.307994 and standard deviation of 0.145656 indicate that female managerial representation remains comparatively low but differs across sampled firms.

Table 5
Descriptive statistics

Variable	N	Minimum	Maximum	Red	Std.Dev
ROA	210	-0.948899	0.943566	0.063338	0.160339
ROE	210	-1,105.553	2.169979	0.055579	0.945565
FAT	210	0.096097	38.41283	4.025089	4.553635
FL	210	0.085905	2.851896	0.480670	0.340803
TI	210	1.30E-05	0,052761	0.016935	0.063884
CATA	210	0.052761	1.364493	0.488260	0.203180
SIZE	210	7.205372	14.33842	12.21762	1.386669
GEND	210	0.083333	0.833333	0.307994	0.145656

Source: Eviews 12 processing results

Partial significance was evaluated from the EViews 12 probability values at $\alpha = 0.05$. A coefficient is treated as statistically significant when its probability is no greater than 0.05; a value above 0.05 indicates insufficient evidence of an individual effect on the dependent variable.

Table 6*Model hypothesis results*

Model 1 Fixed Effects Model			
Dependent Variable: ROA			
Variable	Coefficient	Prob.	Conclusion
C	0.638264	0.0542	
FAT	0.004282	0.0021	Significant positive
FL	-0.117804	0.0002	Negative significance
TI	0.074248	0.0462	Significant positive
CATA	0.130821	0.0002	Significant positive
SIZE	-0.050208	0.0305	Negative significance
GEND	0.041408	0.1546	Insignificant

Source: Eviews 12 processing results

$$ROA = 0.638264 + 0.004282FATit - 0.117804FLit + 0.074248TIit + 0.130821CATAit - 0.050208SIZEit + 0.041408GENDit$$

Table 7*Results of the Model 2 hypothesis*

Model 2 Random Effects Model			
Dependent variable: ROE			
Variable	Coefficient	Prob.	Conclusion
C	0.438450	0.0001	
FAT	-6.63E-05	0.9752	Insignificant
FL	-0.379297	0.0000	Negative significance
TI	0.156159	0.0372	Significant positive
CATA	0.043376	0.0016	Significant positive
SIZE	-0.011211	0.0072	Negative significance
GEND	-0.195559	0.0000	Negative significance

Source: Eviews 12 processing results

$$ROE = 0.438450 - 6.63E-05FATit - 0.379297FLit + 0.156159TIit + 0.043376CATAit - 0.011211SIZEit - 0.195559GENDit$$

Discussion

H1: Fixed Asset Turnover affects the Company's Profitability

FATO is positively and significantly related to ROA ($p = 0.0021$) but is not significant for ROE ($p = 0.9752$). Thus, fixed assets appear to support returns generated from the asset base without producing a corresponding change in shareholder-equity returns. The ROA result is consistent with Nguyen and Pham (2026). The nonsignificant ROE finding also suggests that ownership or turnover of fixed assets alone is insufficient to raise equity returns when capacity is underused or operating and maintenance costs absorb the revenue generated. This interpretation is comparable to the nonsignificant profitability evidence reported by Koapaha (2022).

H2: Financial Leverage affects the Company's Profitability

Financial leverage has a significant negative relationship with both profitability indicators. The ROA coefficient is -0.117804 ($p = 0.0002$), and the ROE coefficient is -0.379297 ($p = 0.0000$); H2 is therefore supported. Increasing debt is associated with lower returns because interest obligations and financial risk reduce the earnings available relative to assets and equity. This result agrees with Nguyen and Pham (2026) and with Musyaffa et al. (2026), who report a negative leverage effect on the ROA of Indonesian consumer-goods firms.

H3: Technological Innovation has an impact on the Company's Profitability

Technological innovation is positively significant in both models: its coefficient is 0.074248 for ROA ($p = 0.0462$) and 0.156159 for ROE ($p = 0.0372$). H3 is therefore supported. The

estimates indicate that greater innovation is associated with improved utilization of assets and equity, which is consistent with the positive profitability relationship documented by Nguyen and Pham (2026).

H4: Current Asset to Total Asset Ratio has an effect on the Company's Profitability

CATA has a significant positive association with profitability. Its coefficient is 0.130821 in the ROA model ($p = 0.0002$) and 0.043376 in the ROE model ($p = 0.0016$), supporting H4. A larger, but effectively managed, share of current assets may facilitate operations and improve returns through adequate cash, receivables, and inventory availability. This finding is aligned with Ahmed and Hamad (2026), who report that the current-asset proportion significantly influences ROA and ROE.

H5: Firm Size Affects Company Profitability

Firm size is significantly and negatively associated with profitability. The coefficients are -0.050208 for ROA ($p = 0.0305$) and -0.011211 for ROE ($p = 0.0072$); H5 is consequently supported. In this sample, greater organizational scale may be accompanied by operating complexity or resource commitments that outweigh scale advantages. The significant size effect is consistent with Nguyen and Pham (2026), although the negative direction is specific to the present estimates.

H6: Gender of Management Affects Company Profitability

Managerial gender is not significant for ROA ($p = 0.1546$) but has a significant negative association with ROE ($p = 0.0000$). Because the outcomes differ across profitability measures, H6 is only partially supported rather than wholly rejected. The result indicates that gender composition does not independently explain the efficiency with which the total asset base generates profit. Its negative ROE association should be interpreted as a sample-level relationship and not as evidence that female participation causes weaker performance. Operational efficiency, asset productivity, financing, and investment choices may be more direct determinants of ROA. The nonsignificant ROA result is comparable to Fairuzi and Tjahjadi (2022), whereas Nguyen and Pham (2026) also identify managerial gender as relevant to profitability.

CONCLUSION

The evidence shows that profitability among IDX-listed food and beverage manufacturers in 2021–2025 reflects a combination of operational, financing, technological, asset-composition, scale, and managerial factors. FATO is positively significant for ROA but not for ROE. Financial leverage is negatively significant in both models, while technological innovation and CATA are positively significant for ROA and ROE. Firm size is negatively significant for both indicators. Managerial gender is not significant for ROA and is negatively significant for ROE. By assessing these factors jointly, the study extends evidence on profitability determinants in the Indonesian food and beverage manufacturing subsector. Managers may use the results to emphasize productive asset deployment, prudent leverage, and appropriately targeted technology investment.

The findings should be interpreted within the study's boundaries. The sample comprises 42 food and beverage manufacturing firms and 210 observations over 2021–2025, so it does not represent every Indonesian industry. Moreover, the ROE model's R-squared value of 37.57% indicates that a substantial share of variation is associated with factors outside the specification. Subsequent research could broaden the period and industry coverage and examine additional determinants, including liquidity, sales growth, governance, ownership, market conditions, and environmental performance. Alternative proxies for technological innovation and managerial gender composition may also provide a more detailed assessment of their profitability implications.

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AUTHOR CONTRIBUTION STATEMENT

Nurhalimah Sari Lubis was responsible for conceptualization, data collection, methodology, statistical analysis, interpretation, and preparation of the original draft. Farah Margaretha Leon contributed to conceptualization, methodological guidance, supervision, and validation, and reviewed the manuscript. Both authors approved the submitted version.

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