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Liquidity and Profitability in Indonesian Agribusiness Companies: The Moderating Roles of Firm Size and Capital Structure

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Abstract:
This study examines how liquidity affects profitability in agribusiness firms and analyzes the moderating roles of firm size and capital structure. Agribusiness firms face unique challenges, including commodity price volatility, seasonal production cycles, and climate-related risks, making effective liquidity management essential to maintaining financial performance. This study used a quantitative approach with purposive sampling, including 45 agribusiness companies listed on the Indonesia Stock Exchange from 2015–2024, yielding 450 firm-year observations. The data were analyzed using Hayes PROCESS Macro Model 2 to simultaneously evaluate the moderating effects of firm size and capital structure within a regression framework. The findings indicate that liquidity has no significant direct effect on profitability ($\beta = 0.0119$, $p = 0.0806$). However, firm size significantly strengthens the liquidity-profitability relationship ($\beta = 0.0069$, $p < 0.001$), whereas capital structure does not significantly moderate it ($\beta = -0.0019$, $p = 0.6963$). These results imply that liquidity management should not focus solely on maintaining higher liquidity levels but rather on improving working capital efficiency and aligning financial strategies with firm capacity and operational conditions.

INTRODUCTION

The agribusiness sector plays a strategic role in supporting Indonesia's economic development by ensuring food security, generating employment, promoting exports, and contributing substantially to national economic growth (Anugrah et al., 2026; Nugraha et al., 2025; Zaman et al., 2025). According to Statistics Indonesia (BPS), Indonesia's economy grew by 5.03% in 2024, while the agriculture, forestry, and fisheries sector remained one of the country's key productive sectors, contributing significantly to national output despite facing production and market challenges. In addition, the 2024 Agricultural Economic Survey reported that agricultural production continued to vary considerably in value and cost across major food crop, horticultural, and plantation commodities, reflecting the sector's high operational uncertainty.

Unlike manufacturing or service industries, agribusiness firms operate under distinctive business characteristics that expose them to greater financial uncertainty (Adetoyinbo et al., 2025; Nyamboga, 2026). Their operations depend heavily on biological production cycles, seasonal harvesting periods, weather variability, climate change, commodity price volatility, and global supply-chain disruptions. These factors lengthen

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cash conversion cycles and increase working capital needs, making liquidity management far more complex than in many other industries. Furthermore, fluctuations in agricultural commodity prices remain substantial in Indonesia, creating uncertainty in corporate cash flows and increasing financial risk for agribusiness firms (Matondang et al., 2024; Hidayat & Wanita, 2026; Sudarta & Baskara, 2026). Consequently, maintaining an appropriate balance between liquidity and profitability has become a key financial management challenge for companies in this sector.

Profitability represents one of the most important indicators of corporate financial performance because it reflects management's ability to generate returns from available resources while maintaining operational sustainability (Azizah & Haron, 2025; Elarabi & Khalifa, 2025). However, achieving high profitability is particularly challenging for agribusiness companies because they must simultaneously maintain sufficient liquidity to finance production activities throughout lengthy production cycles. Excessive liquidity can lead to idle current assets that generate relatively low returns, while insufficient liquidity increases the risk of financial distress and operational disruption. Therefore, determining the optimal liquidity level is considerably more difficult in agribusiness than in sectors with shorter production cycles and more stable market conditions.

From a theoretical perspective, Signalling Theory suggests that corporate financial indicators provide important information regarding firms' financial quality, stability, and prospects (Arhinful et al., 2025; Fathi et al., 2025). Firms that maintain adequate liquidity while achieving strong profitability are generally perceived as financially sound, which may enhance investor confidence (Putra & Wikartika, 2026; Tarawallie & Bein, 2025). However, in agribusiness, high liquidity does not always represent superior financial performance because firms may intentionally retain liquid resources as a precautionary strategy to address production uncertainty, seasonal fluctuations, commodity price volatility, and climate-related risks. Therefore, liquidity's profitability implications depend not only on the amount of liquid assets held but also on firms' ability to allocate and use these resources effectively for productive activities. This suggests that liquidity may serve as a positive financial signal or merely as a risk-buffering mechanism, depending on organizational capacity, operational scale, and industry-specific conditions, underscoring the importance of examining firm characteristics as boundary conditions in the liquidity–profitability relationship.

Recent studies report that liquidity positively affects profitability because adequate liquid resources support daily operations, reduce financial constraints, and enhance firms' financial flexibility (Krisnayanthi et al., 2025; Nguyen et al., 2024). However, excessive liquidity may create opportunity costs by leaving current assets idle and reducing investment efficiency. Recent evidence from Indonesian firms also shows inconsistent findings, with some studies finding insignificant or negative relationships between liquidity and profitability, suggesting that liquidity management's effectiveness depends on context and firms' ability to allocate resources efficiently (Meutiya & Suriono, 2026; Wulandari & Andreas, 2025). These inconsistent results suggest that a direct-effect model may not adequately capture the complex mechanism through which liquidity influences profitability. In particular, agribusiness firms operate under unique conditions characterized by seasonal production cycles, commodity price fluctuations, and operational uncertainty, which may influence how liquidity resources are utilized. Despite its importance, empirical evidence regarding liquidity management in the agribusiness sector remains limited, and the simultaneous moderating effects of firm size and capital

structure have rarely been examined. Therefore, further investigation is needed to understand whether organizational scale and financing decisions shape the extent to which liquidity contributes to profitability (Fatma et al., 2026).

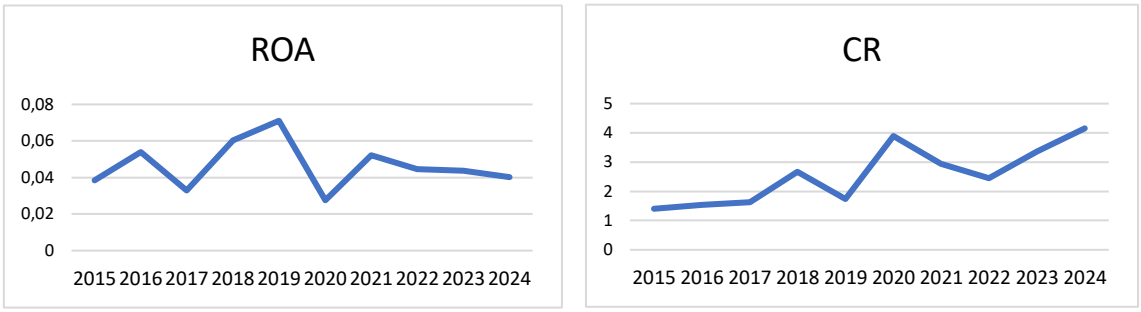


Figure 1. ROA Average and CR Average of Agribusiness Companies
Source: Processed data from LSEG Data & Analytics

Figure 1 illustrates the average trends in the Current Ratio (CR) and Return on Assets (ROA) for Indonesian agribusiness companies from 2015 to 2024. Although the Current Ratio generally remained relatively high throughout the observation period, profitability fluctuated considerably and experienced noticeable pressure during the COVID-19 pandemic before gradually recovering in the post-pandemic period. These contrasting trends indicate that stronger liquidity positions did not consistently translate into higher profitability. This phenomenon suggests that maintaining abundant current assets alone may not automatically improve financial performance and indicates that firm-specific conditions may influence the effectiveness of liquidity management. Therefore, Figure 1 provides preliminary empirical evidence supporting the need to examine moderating variables that may explain these inconsistent relationships.

Rather than indicating simple disagreement among researchers, the inconsistent findings regarding liquidity and profitability suggest that the relationship varies across industrial sectors, institutional settings, and firm characteristics. Positive relationships are commonly observed in industries with stable production cycles and predictable cash flows. In contrast, insignificant or negative effects are more common in sectors with higher operational uncertainty and greater working capital requirements. These differences indicate that industrial conditions, firm scale, and financing decisions may influence the effectiveness of liquidity management. Therefore, considering liquidity as an isolated determinant of profitability may oversimplify corporate financial behavior, particularly in agribusiness firms exposed to biological production risks, seasonal cycles, and market volatility (Lisa & Suhardi, 2025; Melani et al., 2026). Despite the strategic importance of agribusiness in Indonesia, empirical evidence regarding liquidity–profitability dynamics in this sector remains limited. Furthermore, previous studies have rarely examined the simultaneous moderating roles of firm size and capital structure within a single analytical framework.

This study addresses these gaps by examining whether organizational scale and financing structure explain variations in the liquidity–profitability relationship among Indonesian agribusiness firms. Using Hayes' PROCESS Macro Model 2, this research simultaneously estimates two independent moderating effects, providing a more comprehensive understanding of conditional relationships beyond conventional direct-effect models. The theoretical framework integrates Signaling Theory, Pecking Order Theory, and Trade-Off Theory. Signaling Theory suggests that liquidity and leverage

convey information regarding financial stability and prospects (Wonok & Sardjono, 2025; Arhinful et al., 2025). However, in agribusiness, high liquidity may primarily function as a precautionary mechanism against production uncertainty and commodity price fluctuations rather than directly improving profitability. Pecking Order Theory emphasizes the importance of internal funds in reducing dependence on external financing, while Trade-Off Theory highlights the balance between liquidity benefits and opportunity costs (Wonok & Sardjono, 2025; Hartono et al., 2025).

Building on these theoretical perspectives, this study proposes that firm characteristics condition the effectiveness of liquidity management. Firm size may strengthen liquidity's contribution to profitability through greater economies of scale, access to financing, and managerial capabilities (Tarawallie & Bein, 2025). In contrast, higher leverage may reduce financial flexibility and limit the efficient utilization of liquid resources (Tasrim et al., 2024). Evidence on simultaneous moderation remains scarce, particularly among agribusiness firms facing biological uncertainty, seasonal production patterns, and market volatility. By analyzing IDX-listed agribusiness companies during 2015–2024, this study extends empirical evidence from emerging markets. It offers deeper insights into how organizational scale and financing structures shape the role of liquidity in generating profitability. The three hypotheses developed in this study are summarized in Figure 2.

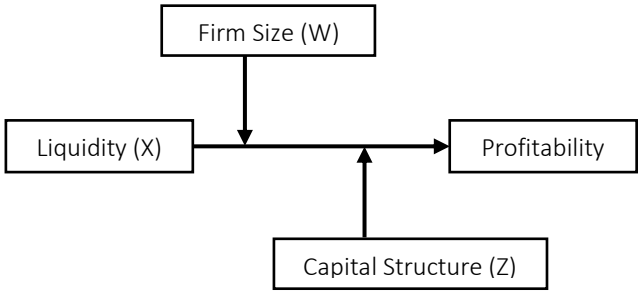


Figure 2. Conceptual Framework

RESEARCH METHODS

This study used an explanatory quantitative research design with longitudinal firm-year observations to examine the relationship between liquidity and profitability and the moderating roles of firm size and capital structure. This approach was selected to test theoretically derived hypotheses using numerical financial data from corporate reports (Creswell, 2021). The moderation analysis used Hayes PROCESS Model 2 to estimate the direct effect of liquidity and the interaction effects of firm size and capital structure, allowing examination of conditional relationships within a single analytical framework (Hayes, 2022). Unlike panel-based approaches that focus on unobserved firm effects, this study emphasizes theory-driven moderation analysis through interaction testing.

The study utilized secondary financial data from agribusiness companies listed on the Indonesia Stock Exchange (IDX) during 2015–2024. We selected this sector because of its distinctive characteristics, including commodity price volatility, seasonal production cycles, biological asset management, climate uncertainty, and extended cash conversion cycles, which make liquidity management strategically important for profitability (Food and Agriculture Organization [FAO], 2024). We obtained financial data from LSEG Data & Analytics and verified them using IDX's audited annual reports and company websites. Using purposive sampling (Sugiyono, 2022), we selected firms that were continuously listed during the observation period, classified within the agribusiness sector, had

complete audited financial statements available, and had sufficient data to calculate CR, ROA, DER, and Ln Total Assets. The final sample included eligible firms that met all criteria for empirical analysis.

Applying these criteria yielded 45 companies and 450 firm-year observations. The sample covers plantation, food processing, fisheries, livestock, and agricultural products. This study used profitability as the dependent variable, liquidity as the independent variable, and firm size and capital structure as moderators. We selected these variables for their theoretical relevance to corporate financial management and their extensive use in empirical studies examining corporate financial performance. We measured profitability with ROA (net income/total assets), which captures asset-use efficiency and supports cross-company comparisons (Brigham & Houston, 2022; Akin et al., 2025).

$$\text{ROA} = \frac{Net\ Income}{Total\ Assets}$$

Liquidity was measured by CR (current assets/current liabilities), reflecting short-term financial capacity and working-capital availability in agribusiness. CR was selected because it captures total current-asset coverage and is widely used in recent liquidity–profitability research (Krisnayanthi et al., 2025; Nguyen et al., 2024).

$$\text{CR} = \frac{Current\ Assets}{Current\ Liabilities}$$

Firm size was measured as Ln(total assets) to reduce scale differences among firms. We modeled it as a moderator because larger firms generally have better access to financing, greater economies of scale, and stronger managerial capacity, enabling them to use liquidity resources more effectively to support profitability (Gnanaprasuna et al., 2025; Tarawallie & Bein, 2025).

$$Firm\ Size = Ln\ (Total\ Assets)$$

Capital structure was measured using the debt-to-equity ratio (DER), calculated as total liabilities divided by shareholders' equity, to represent firms' leverage level and financial flexibility. It was included as a moderating variable because differences in leverage may affect firms' financial constraints and their ability to use liquidity resources effectively. Higher leverage may increase financial obligations and reduce financial flexibility, potentially affecting how liquidity contributes to profitability (Hartono et al., 2025; Tasrim et al., 2024).

$$\text{DER} = \frac{Total\ Debt}{Total\ Equity}$$

This study used secondary quantitative data from publicly available corporate financial information, as these data provide objective, standardized, and verifiable measures for examining financial relationships over an extended period. The dataset comprised agribusiness companies listed on the Indonesia Stock Exchange (IDX) from 2015–2024, selected through purposive sampling to ensure data completeness and consistency. We collected financial data from the LSEG database and cross-checked them with audited annual reports published by IDX and individual company websites. The extracted information, including current assets, current liabilities, total assets, total

liabilities, shareholders' equity, and net income, was used to calculate the Current Ratio (CR), Return on Assets (ROA), Debt-to-Equity Ratio (DER), and natural logarithm of total assets (LnTA). The data were then coded, cleaned, and verified, yielding a final sample of 45 agribusiness companies and 450 firm-year observations.

Data analysis was conducted using IBM SPSS Statistics version 24 and Hayes' PROCESS Macro version 4.2 (Model 2) with a significance level of 5% ($\alpha = 0.05$). Descriptive statistics, including mean, median, minimum, maximum, and standard deviation, were first performed to evaluate the characteristics and distribution of the variables (Hair et al., 2022). The hypotheses were then tested using Moderated Regression Analysis (MRA) through PROCESS Model 2, which simultaneously estimates the direct effect of liquidity (CR) on profitability (ROA) and the independent moderating effects of firm size (LnTA) and capital structure (DER). This approach allows us to assess whether firm characteristics condition the relationship between liquidity and profitability among agribusiness firms. The moderation model estimated in this study is expressed as follows:

$$ROA = \beta_0 + \beta_1 CR + \beta_2 LnTA + \beta_3 DER + \beta_4 (CR \times LnTA) + \beta_5 (CR \times DER) + \varepsilon$$

The significance of the moderating effects was determined based on the regression coefficients of the interaction terms, with a p-value below 0.05 indicating a significant moderation effect. Hayes' PROCESS Macro also provides conditional effect estimates and interaction plots to facilitate interpretation of how the liquidity–profitability relationship changes across different levels of the moderators (Hayes, 2022). The moderation model tested three hypotheses: the direct effect of liquidity on profitability through the Current Ratio coefficient (β_1), the moderating effect of firm size through the interaction between Current Ratio and Firm Size (β_4), and the moderating effect of capital structure through the interaction between Current Ratio and Debt-to-Equity Ratio (β_5). Hypotheses were supported when the corresponding coefficients were statistically significant at the 5% level.

This study relied exclusively on secondary data obtained from publicly available corporate financial reports and the LSEG Data & Analytics database. Because the research did not involve human participants, interviews, questionnaires, or experimental procedures, it did not require informed consent. Nevertheless, the study followed academic integrity principles by ensuring data accuracy, transparent reporting, proper acknowledgment of data sources, and objective interpretation of findings. All financial information came from audited annual reports disclosed by IDX-listed companies, ensuring the research dataset's reliability and credibility.

RESULTS AND DISCUSSION

Results

Descriptive statistical analysis was conducted using 450 firm-year observations from 45 agribusiness companies listed on the Indonesia Stock Exchange during 2015–2024. The analysis summarizes the characteristics and distribution of the research variables, including profitability (ROA), liquidity (CR), capital structure (DER), and firm size (LnTA). Table 1 presents the descriptive statistics.

Table 1. Descriptive Statistics

Variable	N	Mean	Median	St. dev	Max	Min
CR	450	2.5764	1.4270	5.9522	39.7989	0.2202
Firm Size	450	19.1513	19.2639	1.7881	22.8527	15.4885
DER	450	1.363578	0.664501	3.17211	19.86364	0.0006
ROA	450	0.046516	0.050382	0.116465	-0.01338	-0.34926

Table 1 presents the descriptive statistics of the research variables based on 450 firm-year observations. The average Return on Assets (ROA) was 4.65%, indicating that agribusiness companies generated relatively modest returns from their total assets during the observation period. The relatively high standard deviation (0.1165) suggests considerable variation in profitability across companies and years, reflecting differences in operational efficiency, commodity price exposure, and market conditions.

Liquidity, measured by the Current Ratio (CR), averaged 2.5764, indicating that current assets generally exceeded current liabilities. However, the high standard deviation (5.9522) and maximum value (39.7989) indicate substantial differences in liquidity management across firms. The average DER of 1.3636 suggests that debt financing slightly exceeded equity, with considerable variation in financing strategies. Firm size (LnTA) ranged from 15.49 to 22.85, with an average of 19.15, reflecting significant differences in firm scale and supporting the examination of its moderating role.

The next stage of analysis tested the research model using Moderated Regression Analysis (MRA) with Hayes' PROCESS Model 2. This approach simultaneously examined liquidity's direct effect on profitability and the moderating effects of firm size and capital structure through interaction terms. The analysis estimated whether the strength and direction of the liquidity–profitability relationship varied across different levels of organizational scale and leverage. The analysis assessed the significance of the moderation effects using the interaction coefficients and conditional effects generated by the PROCESS Macro.

Table 2. Model Fit Results

Description	Value
R	0.4808
R Square	0.2312
Mean Square Error (MSE)	0.0110
F	26.6977
Sig. F	0.0000
Total of sample	450

As shown in Table 2, the regression model generated an R-value of 0.4808 and an R^2 value of 0.2312, indicating that liquidity, firm size, capital structure, and their interaction terms explain 23.12% of the variation in profitability. The model is statistically significant ($F = 26.6977$, $p < 0.001$), confirming its overall feasibility. Other factors not included in the model may explain the remaining 76.88% of profitability variation, such as operational efficiency, market conditions, corporate governance, and firm-specific characteristics.

Table 3. Moderated Regression Analysis Results

Variable	Coefficient (β)	Standard Error	t-value	p-value	Desc.
Constant	0.0545	0.0117	4.6640	0.0000	Significant
Liquidity (CR)	0.0119	0.0068	1.7514	0.0806	No significant
Firm Size (LnTA)	0.0205	0.0030	6.8955	0.0000	Positive significant
Int CR × LnTA	0.0069	0.0012	5.8553	0.0000	Significant moderation
Capital structure (DER)	-0.0125	0.0100	-1.2525	0.2111	No significant
Int CR × DER	-0.0019	0.0048	-0.3905	0.6963	No Significant moderation

The regression results show that liquidity (CR) has a positive but insignificant effect on profitability (β = 0.0119; p = 0.0806). Firm size (LnTA) positively and significantly affects profitability (β = 0.0205; p < 0.001), and significantly strengthens the liquidity–profitability relationship (CR × LnTA: β = 0.0069; p < 0.001). In contrast, capital structure (DER) has no significant effect on profitability (β = −0.0125; p = 0.2111) and does not moderate the liquidity–profitability relationship (CR × DER: β = −0.0019; p = 0.6963). These findings suggest that larger agribusiness firms are better able to convert liquidity resources into profitability due to greater financial flexibility and operational capacity.

Table 4. Hypothesis Testing Results

Hypothesis	Hypothesis Statement	Result	Desc
H1	Liquidity influences profitability	Sig. = 0.0806 > 0.05	Rejected
H2	Firm size moderates the effect of liquidity on profitability	Sig. = 0.0000 < 0.05	Accepted
H3	Capital structure moderates the effect of liquidity on profitability	Sig. = 0.6963 > 0.05	Rejected

Based on Table 4, we reject the first hypothesis that liquidity affects profitability because the significance value exceeds 0.05. The second hypothesis is accepted because firm size significantly moderates the relationship between liquidity and profitability. Meanwhile, we reject the third hypothesis because capital structure does not significantly moderate the relationship between liquidity and profitability.

Table 5. Conditional Effect of Moderation

Moderating Variable Conditions	Effect	t-statistik	Sig.	Desc.
Low company size & low DER	0.0021	2.5101	0.0124	Significant
Medium company size & medium DER	0.0119	1.7514	0.0806	No significant
High company size & low DER	0.0267	5.5783	0.0000	Significant positive
High company size & medium DER	0.0242	3.1575	0.0017	Significant positive

The conditional effect analysis shows that the influence of liquidity on profitability becomes stronger in companies with larger firm size. Under conditions of high firm size and low capital structure, liquidity has a stronger positive effect on profitability compared to smaller firms.

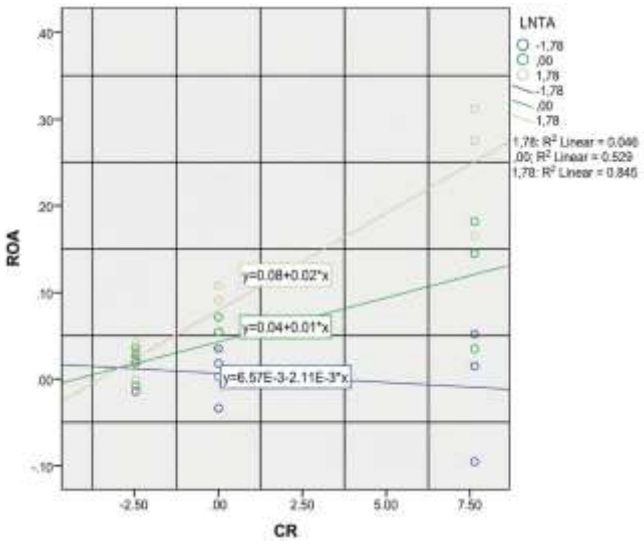


Figure 3. Moderation Graph

Figure 3 demonstrates that firm size strengthens the relationship between liquidity and profitability. The interaction plot shows that the slope of the liquidity–profitability relationship becomes increasingly positive at higher levels of firm size, indicating that larger firms are better able to translate liquidity resources into profitability. In contrast, smaller firms show a weaker relationship, suggesting they may use excess liquidity less effectively because of limited operational capacity, access to financing, and resource management capabilities. These findings support the moderating role of firm size, implying that organizational scale influences how much liquidity contributes to financial performance in agribusiness firms.

Discussion

Liquidity and Profitability

Liquidity does not significantly affect profitability (β = 0.0119; p = 0.0806). Thus, higher current assets alone do not consistently translate into higher ROA. Trade-Off Theory explains the result as a balance between liquidity benefits and the opportunity cost of idle current assets. Recent Southeast Asian evidence similarly emphasizes liquidity's dual role as a stabilizer and potential source of inefficiency (Kuncoro et al., 2025). Agribusiness firms face biological cycles, seasonality, commodity-price volatility, and climate uncertainty, so they may hold liquid assets as precautionary working capital rather than investing them immediately. CR can therefore reflect preparedness more than profitability.

This differs from Nguyen et al. (2024), who reported a positive relationship in Vietnam. Differences in sector composition, operating conditions, period, and analytical method may account for the contrasting results. This finding aligns with Jatmiko and Miswanto (2025), who also reported an insignificant liquidity–profitability relationship and emphasized efficient working-capital allocation. Managers should therefore optimize, rather than maximize, liquidity by aligning working-capital levels with production cycles and investment needs. Overall, the results support a conditional, rather than universally positive, liquidity–profitability relationship in agribusiness.

The Moderating Role of Firm Size

Firm size significantly strengthens the liquidity–profitability relationship (β = 0.0069; p < 0.001), indicating that organizational capacity affects how effectively liquid resources are converted into performance. From Signaling Theory, scale may enhance

liquidity's informational and economic value because larger firms typically have stronger governance and financial credibility (Wonok & Sardjono, 2025). Economies of scale, access to financing, bargaining power, and financial-management capacity may help larger firms convert working capital into productive activity more efficiently.

In agribusiness, long production cycles and uncertainty make these organizational capabilities particularly relevant; larger firms may sustain operations while deploying liquidity productively. This aligns with Tarawallie and Bein (2025), who found that firm size strengthens the liquidity–profitability relationship, although their sample was financial firms in BRICS countries. Shabihah and Rusdi (2025) likewise reported a positive moderating role of firm size in working-capital management, supporting the organizational-capability explanation.

Context may explain differences from studies with weaker size effects: this study covers Indonesian agribusiness during pre-pandemic, pandemic, and recovery periods marked by supply-chain and commodity-price uncertainty. Managers should pair liquidity management with financial planning, inventory control, and operational efficiency; smaller firms may benefit particularly from stronger managerial capacity and access to financing. Theoretically, this result extends Signaling Theory by showing that liquidity value depends on organizational capacity, represented here by firm size.

The Moderating Role of Capital Structure

Capital structure does not significantly moderate the liquidity–profitability relationship ($\beta = -0.0019$; $p = 0.6963$), suggesting that leverage does not materially change liquidity's contribution to ROA. Pecking Order Theory suggests that firms prefer internal funds; therefore, available liquidity may reduce leverage's incremental impact on profitability. Agribusiness firms may prioritize working-capital continuity amid seasonal and commodity uncertainty, limiting leverage's role in modifying the liquidity effect. Substantial variation in DER also indicates heterogeneous financing strategies, which may weaken a common moderating pattern.

This result aligns with Wulandari and Andreas (2025), who found no moderating role for capital structure in an Indonesian manufacturing context. Evidence from Indonesian food and beverage firms also suggests that liquidity and leverage may operate through distinct mechanisms under volatile cash flows. Other studies report positive leverage effects, potentially because debt can expand investment capacity; differences in industry risk and financing conditions may explain the contrast (Sufitrayati & Nursaimatussaddiya, 2026). Trade-Off Theory also explains: the tax and financing benefits of debt may be offset by interest, repayment, and refinancing risks. Managers should therefore align financing with investment needs and risk tolerance rather than treating leverage as a direct mechanism for improving liquidity effectiveness.

The result supports a limited role for leverage in the liquidity–profitability mechanism, consistent with Pecking Order and Trade-Off perspectives under high uncertainty—theoretical and practical implications. The findings indicate that liquidity is not universally associated with profitability; its effect depends on organizational capacity. The positive interaction with firm size extends Signaling Theory by showing that liquidity is more valuable when firms have greater capacity to deploy it. In contrast, the insignificant capital-structure interaction provides limited support for leverage as a conditioning mechanism. Practically, managers should optimize working capital and strengthen financial planning, inventory management, and operational efficiency rather than maximizing liquidity.

This study contributes to the corporate financial management literature by demonstrating that the liquidity–profitability relationship is conditional rather than universal. The findings extend Signaling Theory by showing that liquidity does not automatically signal positive financial health; instead, its value depends on firms' ability to convert liquid resources into productive activities. Larger agribusiness firms use liquidity are effectively because of stronger organizational capacity, financial flexibility, and operational efficiency. The findings also extend Trade-Off Theory by showing that maintaining liquidity requires balancing financial security against opportunity costs, as excessive liquid assets may reduce profitability if not allocated efficiently. Furthermore, the insignificant moderating effect of capital structure offers additional insight into Pecking Order Theory, suggesting that internal liquidity resources may matter more than leverage decisions in supporting profitability, particularly in industries with operational uncertainty and long production cycles.

Practically, the findings suggest that managers should prioritize effective working capital management rather than simply maintaining higher liquidity levels. Agribusiness firms should improve cash-flow planning, operational efficiency, and resource allocation to maximize liquidity's contribution to profitability. Smaller firms, in particular, need to strengthen managerial capabilities and financial systems to narrow the liquidity-utilization gap with larger firms. For investors, liquidity indicators should be evaluated together with firm characteristics, especially firm size, because the profitability benefits of liquidity depend on organizational capacity. Policymakers may support the agribusiness sector's competitiveness by improving access to financing, strengthening corporate governance, and encouraging technological development. Overall, this study highlights that liquidity management effectiveness is shaped by firm-specific capabilities and industry conditions rather than liquidity levels alone, providing a more contextual understanding of financial management in emerging markets.

CONCLUSION

This study examined the relationship between liquidity and profitability among 45 Indonesian agribusiness firms, using 450 firm-year observations from 2015 to 2024. The findings reveal that liquidity does not have a statistically significant direct effect on return on assets (ROA) ($\beta = 0.0119$; $p = 0.0806$), suggesting that higher liquidity levels alone do not necessarily translate into improved profitability. However, firm size significantly strengthens the liquidity–profitability relationship ($\beta = 0.0069$; $p < 0.001$), indicating that larger firms are better positioned to convert liquidity resources into operational advantages, while capital structure does not significantly moderate this relationship ($\beta = -0.0019$; $p = 0.6963$). These findings contribute to the literature by showing that liquidity management effectiveness depends on firm-specific capabilities and organizational scale rather than liquidity accumulation itself. From a managerial perspective, agribusiness firms should prioritize efficient working-capital allocation, operational flexibility, and resource-utilization strategies rather than pursuing excessive liquidity levels. The findings also provide implications for investors and policymakers by highlighting the importance of considering firm characteristics when evaluating financial performance and liquidity policies in the agribusiness sector. Future research may extend this study by incorporating additional contextual factors, such as market uncertainty, supply-chain dynamics, corporate governance mechanisms, and macroeconomic conditions, to provide a more comprehensive understanding of the determinants of profitability.

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CONFLICTS OF INTEREST

No conflict of interest.

USE OF ARTIFICIAL INTELLIGENCE (AI)-ASSISTED TECHNOLOGY

The authors used generative AI applications, such as ChatGPT and Grammarly, solely to refine language, including grammar, coherence, and overall manuscript readability. All AI-generated suggestions were critically evaluated, validated, and revised by the authors before incorporation into the manuscript. The authors assume complete responsibility for the accuracy, scholarly integrity, interpretations, and conclusions expressed in this work.

REFERENCES

Adetoyinbo, A., Harrison, R., & Mithöfer, D. (2025). The Contingent Interplay Between Resources, Entrepreneurship and Agribusiness Performance Among Small-Scale Agri-Food Actors. *International Journal of Entrepreneurial Behavior & Research*, *31*(7), 1621–1646. https://doi.org/10.1108/IJEBR-10-2023-1124

Akin, I., Akin, M., Satiroglu, H., & Jhamb, M. (2025). Influence of Growth, Capital Structure, Profitability, and Size on FTSE 100 Enterprise Value. *Journal of Corporate Accounting & Finance*, *36*(2), 157–168. https://doi.org/10.1002/jcaf.22761

Anugrah, I. S., Wahyono, E., Ishak, A., & Sutisna, E. (2026). Concept and Implementation of Sustainable Agricultural Development in the Circle of Poverty and Food Insecurity in Indonesia. In *Handbook on Food Security and Social Work: Global Strategies for Hunger and Nutrition* (pp. 1–31). Springer.

Azizah, U. S., & Haron, R. (2025). The Sustainability Imperative: Evaluating the Effect of ESG on Corporate Financial Performance Before and After the Pandemic. *Discover Sustainability*, *6*(1), Article 529. https://doi.org/10.1007/s43621-025-01401-8

Brigham, E. F., & Houston, J. F. (2022). *Fundamentals of Financial Management* (16th ed.). Cengage.

Creswell, J. W. (2021). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (6th ed.). SAGE Publications.

Elarabi, H. A. O., & Khalifa, W. (2025). Impact of Sustainable Finance on Business Financial Performance: Insight from London Stock Exchange Firms. *Sustainability*, *17*(11), Article 4898. https://doi.org/10.3390/su17114898

Essa, P., Putri, K., Bagus, I., & Prianthara, T. (2026). Translating Good Governance into Patient Satisfaction: The Mediating Role of Service Quality in Indonesian Primary Healthcare. *Business and Applied Management Journal*, *4*(2), 260–275. https://doi.org/10.61987/bamj.v4i2.2297

Gnanaprasuna, E., & Reddy, K. S. (2025). Impact of Capital Structure on the Performance of Non-Financial Firms in Emerging Markets: Evidence from the Bombay Stock Exchange Using GMM Estimation. *International Journal of Accounting and Economics Studies*, *12*(6), 624–631. https://doi.org/10.14419/wdz50q51

Hartono, P. G., & Simanungkalit, N. G. (2025). Capital Structure, Profitability, Liquidity, and Firm Size in Indonesia's Healthcare Sector: A Dynamic Panel Data Approach. *Proceedings of Forum Manajemen Indonesia's International Conferences*, *2*, 495–504. https://doi.org/10.47747/fmiic.vi2.2964

Hayes, A. F. (2022). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach* (3rd ed.). Guilford Press.

Hidayat, M. H., & Wanita, N. (2026). Building the Financial Performance Capability of Seasonal Rice Farms Amid Market Change: A Grounded Theory Study of Intertemporal Cash Flow Management. *Jurnal Sosial Ekonomi Pertanian*, *22*(2), 181–201.

Jatmiko, M. S., & Miswanto, M. (2025). Analysis of the Effect of Liquidity, Income Tax Expense, and Leverage on Profitability. *Asean International Journal of Business*, *4*(2), 223–239. https://doi.org/10.54099/aijb.v4i2.1460

Krisnayanthi, N. M. D., Gunadi, I. G. N. B., & Astiti, N. P. Y. (2025). Capital Structure, Liquidity, and Firm Size as Determinants of Profitability: Evidence from Property and Real Estate Companies on the Indonesia Stock Exchange, 2020–2023. *EMAS*, *6*(11), 2723–2733. https://doi.org/10.36733/emas.v6i11.13021

Kuncoro, M. T., Putri, A. N., Syanti, L., Febriyani, A., & Setyarini, A. D. (2025). Revisiting the Trade-Off Theory: The Role of Liquidity in Profitability Outcomes. Evidence from Southeast Asia. *BIS Economics and Business*, *2*, Article V225016. https://doi.org/10.31603/biseb.234

Lisa, D., & Suhardi. (2025). The Effect of Liquidity, Leverage, and Profitability on the Financial Performance of Agricultural Companies. *Kajian Akuntansi*, *26*(2), 211–220. https://doi.org/10.29313/kajian_akuntansi.v26i2.8579

Matondang, M. R., Krisnamurthi, B., & Herawati, H. (2024). Price Fluctuations and Volatility of National Strategic Food Commodities in Indonesia. *Agrisocionomics: Jurnal Sosial Ekonomi Pertanian*, *8*(1), 134–146.

Meutiya, S. F., & Suriono, H. (2026). Liquidity, Capital Structure, and Asset Utilisation as Determinants of Profitability: Evidence from Food and Beverage Sub-Sector Firms Listed on the Indonesia Stock Exchange (2021–2024). *Priviet Social Sciences Journal*, *6*(5), 373–390. https://doi.org/10.55942/pssj.v6i5.1924

Millenia, S., Irawati, D., & Utomo, A. S. (2024). Pengaruh Likuiditas dan Profitabilitas terhadap Penggunaan Hutang: Pengujian Pecking Order Theory. *Volatilitas Jurnal Manajemen dan Bisnis*, *6*(1). https://doi.org/10.37729/volatilitas.v6i1.4191

Nguyen, T. T. C. N., Le, A. T. H., & Nguyen, C. V. (2024). The Impact of Liquidity and Corporate Efficiency on Profitability. *Emerging Science Journal*, *8*(1), 180–191.

Nugraha, H., & Suprehatin, S. (2025). Indonesia's Position and Participation in the Global Value Chain of the Agriculture Sector. *Journal of Management & Agribusiness*, *22*(1), Article 105. https://doi.org/10.17358/jma.22.1.105

Nyamboga, T. O. (2026). Strategic Decisions and the Entrepreneurial Mindset in Sustaining Agribusiness SMEs in Emerging Economies: Unlocking Pathways to Resilience—A Narrative Review. *F1000Research*, *15*, Article 277. https://doi.org/10.12688/f1000research.177782.1

Shabihah, K., & Rusdi, D. (2025). Moderation of Firm Size in the Influence of Working Capital and Inventory on the Company's Financial Performance. *Journal of Accounting and Finance Management*, *6*(1), 28–37. https://doi.org/10.38035/jafm.v6i1.1595

Sudarta, I. M., & Baskara, I. G. K. (2026). Agricultural Commodity Prices, Firm Characteristics, Corporate Value. *International Journal of Economic Literature*, *4*(1), 46–61.

Sudradjat. (2025). Impact of Corporate Governance, Capital Structure, and Liquidity on Regional Bank Profitability in Indonesia. *The Accounting Journal of Binaniaga*, *10*(2), 113–124. https://doi.org/10.33062/ajb.v10i02.114

Sufitrayati, & Nursaimatussaddiya. (2026). Determinants of Capital Structure and the Effect on Financial Performance: Testing Pecking Order and Trade-Off Models. *Jurnal Ilmiah Manajemen Kesatuan*, *14*(1), 757–768. https://doi.org/10.37641/jimkes.v14i1.4675

Sugiyono. (2022). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Alfabeta.

Suryanto, A., Dadang, & Kusnandar. (2025). Monetary Policy, Liquidity, and the Risk Profitability Nexus: Evidence From Indonesian State and Private Banks. *Business and Applied Management Journal*, *3*(2), 268–281. https://doi.org/10.61987/bamj.v3i2.1643

Taherinia, M., & Barzegar, M. M. (2024). *Capital Structure Adjustment Speed and Expected Returns: Examination of Information Asymmetry as a Moderating Role* (Version 1). arXiv. https://doi.org/10.48550/ARXIV.2403.06035

Tarawallie, F. A. B., & Bein, M. (2025). The Moderating Effect of Size on the Relationship Between Liquidity Management and Sustainable Profitability: Evidence from BRICS Financial Firms. *Sustainability*, *17*(18), Article 8128. https://doi.org/10.3390/su17188128

Tasrim, T., Anwar, V., Estiani, E., Kurniawan, A., & Jayanti, A. (2024). Determination of Debt Use on Capital Structure in Indonesia. *JBTI: Jurnal Bisnis: Teori dan Implementasi*, *15*(3), 244–257. https://doi.org/10.18196/jbti.v15i3.22671

Thinh, T. Q., Thuy, L. X., & Tuan, D. A. (2022). The Impact of Liquidity on Profitability: Evidence of Vietnamese Listed Commercial Banks. *Business: Theory and Practice*, *17*(1), 94–103. https://doi.org/10.21511/bbs.17(1).2022.08

Tyas, N. T., Susilowati, E., Rochwulaningsih, Y., & Pramesturi, A. W. (2026). The Policy Paradox of Rice Import Restrictions: Food Sovereignty and Governance in Post-Reform Indonesia. *Business and Applied Management Journal*, *4*(2), 420–433. https://doi.org/10.61987/bamj.v4i2.2499

Wonok, S. G. C., & Sardjono, O. Y. M. (2025). Sinyal Informasi Keuangan dalam Konteks Kesulitan Keuangan. *Riset Akuntansi dan Manajemen Pragmatis*, *3*(2), 119–134. https://doi.org/10.58784/ramp.401

Wulandari, B. S. A., & Andreas, H. H. (2025). The Role of Capital Structure in Moderating Liquidity, Profitability and Firm Size. *KRISNA: Kumpulan Riset Akuntansi*, *17*(1), 30–42. https://doi.org/10.22225/kr.17.1.2025.30-42

Yohanes, Y. (2025). Effect of Capital Structure on Profitability with Liquidity as a Moderating Variable: Empirical Study on Food and Beverage Companies. *International Journal of Multidisciplinary Approach Research and Science*, *3*(3), 813–832. https://doi.org/10.59653/ijmars.v3i03.1784

Zaman, M. H., Wahyuningsih, D., & Yudo Nugroho, R. Y. (2025). Agricultural Value-Added Growth: Exploring the Impact of Trade, Inputs and Environmental Factors. *Journal of Agribusiness in Developing and Emerging Economies*, *15*(6), 1–25. https://doi.org/10.1108/JADEE-01-2025-0039