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Liquidity and Profitability Effects on Stock Prices Mediated by Trading Volume Activity

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Abstract

This study examines the effects of liquidity and profitability on stock prices and examines whether Trading Volume Activity (TVA) mediates these relationships in technology-sector firms listed on the Indonesia Stock Exchange during the 2022–2024 post–tech winter period. The research adopts an explanatory quantitative approach using secondary panel data derived from published annual financial statements and official trading records. From a population of 47 firms included in the IDXTECHNO index, 24 companies were selected through purposive sampling, resulting in 72 firm-year observations. Data were analyzed using Partial Least Squares–Structural Equation Modeling (PLS-SEM) with SmartPLS 4, and hypothesis testing was conducted through bootstrapping procedures. The findings indicate that liquidity, proxied by the Current Ratio, has a negative and significant effect on stock prices, while profitability, measured by Return on Assets, has a positive and significant influence. Liquidity does not significantly affect TVA, whereas profitability positively increases trading activity. Furthermore, TVA has a negative and significant effect on stock prices. Mediation testing shows that TVA does not mediate the relationships between liquidity, profitability, and stock prices. The structural model demonstrates limited explanatory power, suggesting that stock price variation is only partially explained by the proposed variables. Overall, the results imply that stock price formation in technology firms during the post–tech winter phase is driven primarily by direct fundamental performance, particularly profitability, rather than by trading activity mechanisms. These findings support Portfolio Theory and Signaling Theory under heightened market uncertainty.

Keywords: Liquidity, Profitability, Trading Volume Activity, Stock Price, PLS-SEM

1. Introduction

Global stock markets have experienced heightened volatility in recent years due to the combined effects of global economic pressures, geopolitical uncertainty, and monetary tightening. The Nasdaq Composite, which is dominated by technology stocks, declined by 33.1% in 2022, while the S&P 500 fell by 19.4%, marking the worst bear market since the 2008 financial crisis. Similarly, the MSCI World decreased by 18.7% in the same year [1]. Rising global inflation and benchmark interest rate hikes prompted investors to reduce exposure to high-risk assets, particularly technology stocks, shifting their preferences from growth-oriented investments toward fundamentally driven performance[2].

These global pressures triggered the “tech winter” phenomenon, characterized by declining valuations, tightening liquidity, and reduced funding flows since 2022. The post–tech winter period (2022–2024) represents an adjustment phase in which technology firms prioritize efficiency and profitability in response to changing market conditions. This phenomenon has affected not only startups but also large technology firms and publicly listed technology companies. In Indonesia, startup funding fell by 87% year-on-year in the first semester of 2023 [3], while globally more than 227,000 technology-sector employees were laid off during 2022-2023 [4],[5].

The impact of the tech winter is reflected in Indonesia’s capital market performance. The Indeks Harga Saham Gabungan slowed from 10.08% growth in 2021 to 4.09% in 2022 and 1.20% in 2023[6]. More specifically, the IDXTECHNO declined by 27% in 2022 and 16% in 2023[7], accompanied by a significant contraction in daily transaction value. These developments indicate that the technology sector has become increasingly sensitive to corporate fundamentals and investor perceptions during the post–tech winter period.

In volatile market conditions, stock prices reflect how investors evaluate corporate risk and prospects based on fundamental information. Liquidity and profitability are two primary indicators used to assess financial health. According to Portfolio Theory, investors seek optimal risk-return combinations, where liquidity represents a firm’s

ability to meet short-term obligations and profitability indicates its capacity to generate earnings. Furthermore, Signaling Theory suggests that financial information serves as a signal influencing investor perception and decision-making, ultimately affecting stock price movements.

Empirical findings regarding the effect of liquidity on stock prices remain inconsistent. Several studies report that liquidity has a positive and significant impact on stock prices [8]; [9]; [10]. However, other findings indicate that liquidity does not significantly influence stock prices [11]. Similarly, prior research examining the relationship between profitability and stock prices shows mixed results. A number of studies confirm that profitability positively affects stock prices [8];[10];[12];[13]. Nevertheless, some researchers find that profitability indicators such as Return on Assets (ROA) do not significantly affect stock prices [14];[15]; [16]. Regarding Trading Volume Activity (TVA), previous studies predominantly position TVA as an independent variable influencing stock prices [17]; [18]; [19]; [20] or as a dependent variable [14]. However, limited empirical evidence examines TVA as a mediating variable linking firm fundamentals and stock prices.

Accordingly, this study addresses the research gap by integrating Trading Volume Activity as a mediating variable to explain the transmission mechanism of liquidity and profitability on stock prices of technology-sector firms listed on the Indonesia Stock Exchange during the 2022–2024 post–tech winter period.

2. Research Methods

2.1 Research Approach and Type

This study adopts a quantitative research approach. According to [21], quantitative research focuses on the collection and analysis of numerical data that can be measured objectively. This approach is employed to examine relationships among variables using standardized measurement instruments and statistical analysis to identify patterns, relationships, or trends. Quantitative research aims to test previously formulated theories or hypotheses and generate findings that can be generalized to a broader population.

The type of research used in this study is explanatory research. As stated [22], explanatory research aims to explain causal relationships among variables through hypothesis testing derived from theoretical foundations. This design is appropriate because the study seeks to empirically examine the causal mechanism between liquidity, profitability, Trading Volume Activity (TVA), and stock prices.

2.2 Object and Subject of the Study

The objects of this study consist of liquidity, profitability, Trading Volume Activity (TVA) as a mediating variable, and stock price. The study investigates how financial fundamentals interact with trading activity and influence stock price movements. The subjects are technology sector companies listed on the Bursa Efek Indonesia and included in the IDXTECHNO index during 2022–2024.

2.3 Research Location and Period

The research was conducted using data obtained from the Indonesia Stock Exchange, company annual reports, and official publications. The study analyzes financial and market data for the 2022–2024 period, representing the post–tech winter phase.

2.4 Source and Type of Data

This study uses secondary data derived from published annual financial statements and stock market data. According [23], secondary data refers to information previously collected and published by other parties. The dataset is panel data, combining cross-sectional data (firms) and time-series data (years)

2.5 Population and Sample

The population consists of 47 technology companies listed in the IDXTECHNO index during 2022-2024. The sample includes 24 companies selected through purposive sampling, resulting in 72 firm-year observations. The sampling criteria are: Companies consistently listed in IDXTECHNO during 2022-2024, Companies not experiencing trading suspension, Companies publishing complete annual financial reports, Companies with complete data for all research variables.

2.6 Data Collection Technique

Data were collected using the documentation method by reviewing annual reports and stock trading data from official sources.

2.7 Operational Definition of Variables

Stock price is used as the dependent variable representing the company's market value formed through supply and demand mechanisms in the capital market. In this study, stock price is measured using the closing price, defined as the stock price at the end of each trading session during the observation period. The closing price is selected because it reflects the final market consensus and is widely used in empirical capital market research.

Liquidity, as an independent variable, is measured using the Current Ratio (CR), which reflects a company's ability to meet its short-term obligations using its current assets. The measurement of liquidity refers [24] and is formulated as follows:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} \times 100\%$$

Profitability is measured using Return on Assets (ROA), which indicates the company's ability to generate net income from the total assets employed. ROA reflects management effectiveness in utilizing company assets as a whole. The measurement of profitability refers [24] and is formulated as follows:

$$\text{Return on Assets} = \frac{\text{Net Income}}{\text{Total Assets}} \times 100\%$$

Trading Volume Activity (TVA) is used as a mediating variable to represent market reactions to fundamental corporate information through stock trading activities. TVA reflects trading intensity relative to the number of shares outstanding. The measurement of TVA refers [25] and is formulated as follows:

$$\text{TVA} = \frac{\text{Number of Shares Traded at time } t}{\text{Number of Shares Outstanding at time } t}$$

2.8 Data Instrument

The instruments consist of published financial statements and stock market data used to measure CR, ROA, TVA, and closing stock prices.

2.9 Data Analysis

Data were analyzed using Partial Least Squares–Structural Equation Modeling (PLS-SEM) with SmartPLS software. According [26], PLS-SEM is suitable for predictive-oriented structural modeling and hypothesis testing.

The analysis includes descriptive statistics to summarize minimum, maximum, mean, and standard deviation values (Burns et al., 2021). Structural model evaluation focuses on the inner model by assessing the coefficient of determination (R^2), predictive relevance (Q^2), and effect size (f^2), where values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects, respectively.

Hypotheses are tested using bootstrapping procedures. A hypothesis is supported if the t-statistic exceeds 1.96 and the p-value is less than 0.05. Mediation testing is conducted by examining the significance of indirect effects through bootstrapping to determine whether Trading Volume Activity mediates the relationship between liquidity and profitability on stock price.

2.10 Conceptual Framework

Based on Portfolio Theory [27] and Signaling Theory [28], stock prices are formed by fundamental company information and investor responses to that information. Liquidity and profitability reflect financial conditions and corporate performance that influence perceptions of risk and return potential, which are subsequently translated into market reactions through Trading Volume Activity. In the post-tech winter technology sector, increased volatility and market uncertainty strengthen investor sensitivity to fundamental signals. Liquidity and profitability not only directly affect stock prices but also stimulate changes in trading activity as a form of collective investor response. Trading Volume Activity is positioned as a mediating variable explaining the mechanism through which liquidity and profitability influence stock prices, as illustrated in Figure 1.

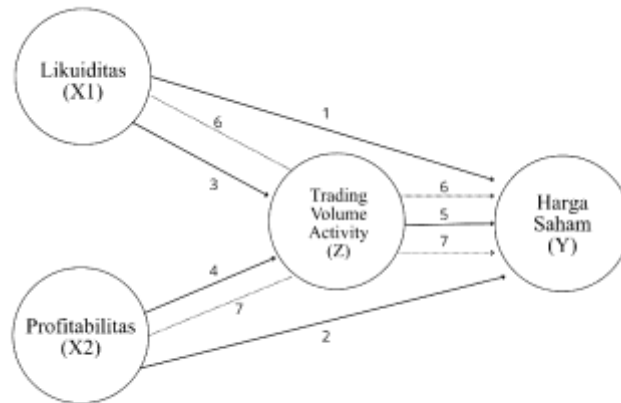


Figure 1. Conceptual Framework of the Study
 (Source: Processed Data, 2026)

2.11 Research Hypotheses

Based on the conceptual framework and supported by Portfolio Theory and Signaling Theory, the hypotheses are formulated as follows:

- H1: Liquidity has a significant effect on stock prices of technology sector companies listed on the Indonesia Stock Exchange in the post-tech winter period.
- H2: Profitability has a significant effect on stock prices of technology sector companies listed on the Indonesia Stock Exchange in the post-tech winter period.
- H3: Liquidity has a significant effect on Trading Volume Activity of technology sector companies listed on the Indonesia Stock Exchange in the post-tech winter period.
- H4: Profitability has a significant effect on Trading Volume Activity of technology sector companies listed on the Indonesia Stock Exchange in the post-tech winter period.
- H5: Trading Volume Activity has a significant effect on stock prices of technology sector companies listed on the Indonesia Stock Exchange in the post-tech winter period.
- H6: Liquidity has a significant indirect effect on stock prices through Trading Volume Activity in technology sector companies listed on the Indonesia Stock Exchange in the post-tech winter period.
- H7: Profitability has a significant indirect effect on stock prices through Trading Volume Activity in technology sector companies listed on the Indonesia Stock Exchange in the post-tech winter period.

3. Results and Discussions

3.1 Descriptive Statistics

This study employs panel data consisting of 72 observations from 24 technology sector companies listed on the Indonesia Stock Exchange during the 2022–2024 period. Descriptive statistics are used to describe the characteristics of the research data through minimum, maximum, mean, and standard deviation values for each variable. The results are presented in Table 1.

Tabel 1. Descriptive Statistics

Variabel	N	Minimum	Maksimum	Mean	Std Deviation
Liquidity (CR)	72	0,84	36,58	5,36	7,52
Profitability (ROA)	72	-1,67	0,17	-0,05	0,27
Trading Volume Activity (TVA)	72	0,000008	88,55	1,94	10,74
Stock Price	72	8	43.000	2.497,96	8.439,27

Source: Processed data (2026)

Based on Table 1, all research variables exhibit substantial variation across firms. Liquidity (CR) shows a wide range and relatively high standard deviation compared to its mean, indicating heterogeneity in short-term financial conditions among technology firms. Profitability (ROA) has a negative mean value, suggesting that several firms experienced losses during the observation period. Trading Volume Activity demonstrates high

dispersion, as reflected by a standard deviation significantly larger than its mean. Similarly, stock prices vary considerably, as indicated by the broad minimum–maximum range and large standard deviation.

3.2 Path Analysis Using PLS-SEM

The structural relationships among liquidity, profitability, Trading Volume Activity (TVA), and stock price were analyzed using the Partial Least Squares–Structural Equation Modeling (PLS-SEM) method with the assistance of SmartPLS 4 software. The estimation of path coefficients and significance levels was conducted using the bootstrapping procedure. A summary of the structural model estimation results is presented in Figure 2.

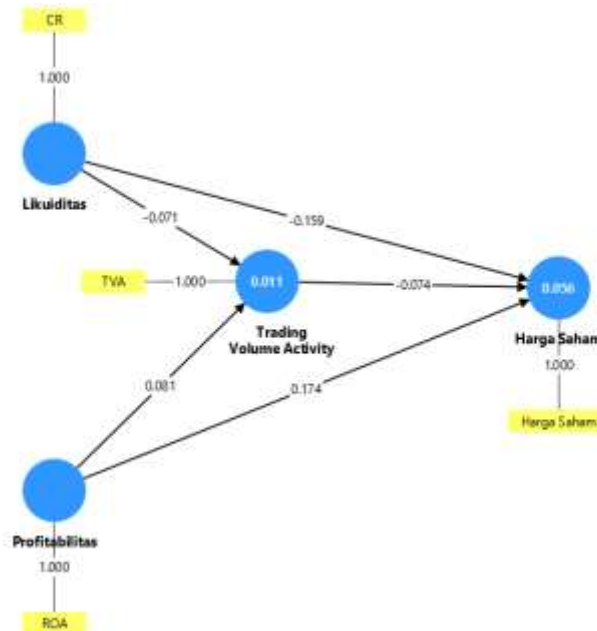


Figure 2. PLS-SEM Path Diagram

Source: Processed data (2026)

Based on the path analysis results, liquidity has a negative and significant effect on stock price ($\beta = -0.159$; $t = 4.952$), while profitability has a positive and significant effect on stock price ($\beta = 0.174$; $t = 3.000$). These results indicate that the ability to generate earnings remains an important signal in the valuation of technology companies' stocks, Liquidity does not have a significant effect on Trading Volume Activity ($\beta = -0.071$; $t = 1.053$), indicating that the liquidity condition of technology sector companies in the post–tech winter period is not a primary factor influencing stock trading activity. In contrast, profitability has a positive and significant effect on Trading Volume Activity ($\beta = 0.081$; $t = 1.983$), although the magnitude of the effect is relatively weak. This finding suggests that investors respond to improvements in corporate earnings performance. Trading Volume Activity also has a negative and significant effect on stock price ($\beta = -0.074$; $t = 2.815$), suggesting that increased trading activity does not necessarily lead to higher stock prices. Overall, the results indicate that not all hypothesized relationships in the research model are empirically supported. Therefore, further discussion regarding hypothesis acceptance or rejection and the evaluation of Trading Volume Activity as a mediating variable is presented in the subsequent subsection.

3.3 Structural Model Evaluation

The structural model was evaluated using the coefficient of determination (R^2), predictive relevance (Q^2), and effect size (f^2) to assess the explanatory power, predictive capability, and relative contribution of each exogenous variable to the endogenous variables. The results are presented in Table 3 and Table 4.

Table 3. Structural Model Evaluation (R² and Q²)

Endogenous Variable	R ²
Trading Volume Activity	0.011
Stock Price	0.056
$Q^2 = 1 - (1 - R_1)(1 - R_2)$	
$Q^2 = 1 - (1 - 0,011)(1 - 0,056)$	
$Q^2 = 1 - (0,989)(0,944)$	
$Q^2 = 1 - 0,934$	
$Q^2 = 0,066$	

Source: Processed Data (2026)

The R² values indicate that liquidity and profitability explain 1.1% of the variance in Trading Volume Activity. Meanwhile, liquidity, profitability, and Trading Volume Activity collectively explain 5.6% of the variance in stock price. Although the explanatory power of the model is relatively low, the Q² value greater than zero indicates that the model has predictive relevance and is appropriate for hypothesis testing.

Table 4. Structural Model Evaluation (f²)

Relationship	f ²	Effect Size Category
Liquidity → Stock Price	0.027	Small
Liquidity → Trading Volume Activity	0.005	Very small
Profitability → Stock Price	0.032	Small
Profitability → Trading Volume Activity	0.007	Very small
Trading Volume Activity → Stock Price	0.006	Very small

Source: Processed Data (2026)

The effect size results show that liquidity and profitability have a small effect on stock price. Meanwhile, the effects of liquidity and profitability on Trading Volume Activity, as well as the effect of Trading Volume Activity on stock price, are categorized as very small. These findings indicate that although some structural relationships are statistically significant, their practical contribution to the endogenous variables remains limited.

3.4 Hypothesis Testing Results

Hypothesis testing was conducted to examine the causal relationships among variables in the structural model. The significance of each relationship was assessed using the bootstrapping procedure in SmartPLS 4. A hypothesis is considered significant if the t-statistic > 1.96 and the p-value < 0.05. The results are presented in Table 5.

Table 5. Hypothesis Testing Results

Hypothesis	Relationship	Original Sample	T-Statistic	P-Value	Result
H1	Liquidity → Stock Price	-0.159	4.952	0.000	Significant
H2	Profitability → Stock Price	0.174	3.000	0.003	Significant
H3	Liquidity → Trading Volume Activity	-0.071	1.053	0.292	Not Significant
H4	Profitability → Trading Volume Activity	0.081	1.983	0.047	Significant
H5	Trading Volume Activity → Stock Price	-0.074	2.815	0.005	Significant

Source: Processed Data (2026)

The results indicate that liquidity has a negative and significant effect on stock price, while profitability has a positive and significant effect on stock price. Profitability also has a positive and significant effect on Trading Volume Activity. In contrast, liquidity does not have a significant effect on Trading Volume Activity. Furthermore, Trading Volume Activity has a negative and significant effect on stock price.

3.5 Mediation Analysis

Mediation analysis was conducted to examine the role of Trading Volume Activity in mediating the effect of liquidity and profitability on stock price. The indirect effects were tested using the bootstrapping procedure in SmartPLS 4. The results are presented in Table 6.

Table 6. Mediation Testing Results

Hypothesis	Indirect Relationship	Original Sample	T-Statistic	P-Value	Result
H6	Liquidity → Trading Volume Activity → Stock Price	0.005	0.816	0.414	Not Significant
H7	Profitability → Trading Volume Activity → Stock Price	-0.006	1.021	0.307	Not Significant

Source: Processed Data (2026)

The results show that Trading Volume Activity does not mediate the effect of liquidity or profitability on stock price. The indirect effects of both mediation paths are statistically insignificant. These findings indicate that the influence of liquidity and profitability on stock price in post-tech winter technology sector companies occurs primarily through direct effects rather than through the mechanism of stock trading activity.

3.6 Discussion

3.6.1 Effect of Liquidity on Stock Price

The findings indicate that liquidity, proxied by Current Ratio (CR), has a negative and significant effect on stock prices of technology sector companies listed on the Indonesia Stock Exchange after the tech winter phenomenon. This result suggests that higher liquidity is not necessarily perceived positively by investors in growth-oriented industries. The negative coefficient implies that an increase in liquidity tends to be followed by a decline in stock prices [29]. Economically, excessive liquidity may signal idle cash or inefficient allocation of short-term assets. In technology firms, which rely heavily on innovation and expansion, holding excessive current assets may indicate limited reinvestment into productive activities. From the perspective of Signaling Theory, liquidity represents a fundamental signal disclosed through financial statements. However, in the post-tech winter context, high liquidity may be interpreted ambiguously or even negatively, as investors expect aggressive growth strategies rather than conservative cash retention. Growth-oriented investors may perceive high liquidity as managerial defensiveness, thereby adjusting their valuation downward. This finding contrasts with several prior studies that report a positive relationship between liquidity and stock prices, particularly in stable or non-technology sectors. Therefore, the impact of liquidity appears highly contextual, depending on industry characteristics and market conditions[30].

3.6.2 Effect of Profitability on Stock Price

The results show that profitability, measured by Return on Assets (ROA), has a positive and significant effect on stock prices. This indicates that the company's ability to generate earnings from its assets is a key factor influencing investor valuation. The positive coefficient confirms that higher profitability increases stock prices. Profitability reflects operational efficiency and value creation capability, which strengthen investor confidence. In the uncertain post-tech winter environment, profitability becomes a critical differentiating factor among technology firms [31]. According to Signaling Theory, profitability provides a strong positive signal regarding managerial effectiveness and future prospects. Investors interpret higher earnings as an indicator of sustainability, increasing demand for shares and driving up stock prices. From Portfolio Theory, profitability represents expected return potential. Stocks with higher profitability are more attractive in portfolio allocation decisions, increasing demand and market valuation. Thus, despite industry volatility, profitability remains a fundamental determinant of stock price formation in the technology sector.

3.6.3 Effect of Liquidity on Trading Volume Activity

The findings reveal that liquidity does not significantly affect Trading Volume Activity (TVA). Although the coefficient direction is negative, the effect is statistically insignificant. This indicates that internal liquidity conditions are not a primary determinant of trading intensity in technology stocks. Investors appear to prioritize growth prospects and long-term return expectations rather than short-term financial stability. In line with Signaling Theory, liquidity may function as a fundamental signal, but it does not trigger strong transactional responses in the market [32]. From a portfolio perspective, trading decisions in technology stocks are more influenced by risk-return expectations than short-term liquidity metrics. Furthermore, in the post-tech winter period, trading activity tends to be driven more by macroeconomic sentiment, interest rate expectations, and industry outlook rather than firm-level liquidity.

3.6.4 Effect of Profitability on Trading Volume Activity

Profitability has a positive and significant effect on Trading Volume Activity. This suggests that higher earnings performance encourages greater investor participation in the market. The positive relationship indicates

that profitable firms attract more active trading. Profitability serves as a credible signal of firm quality, reducing uncertainty and stimulating buy-and-sell transactions[33]. Under Signaling Theory, profit announcements convey strong information about firm performance, prompting investors to adjust their portfolios. In volatile technology markets, reliable profitability signals become increasingly valuable, thus increasing trading intensity. Therefore, profitability not only influences valuation but also stimulates market activity.

3.6.5 Effect of Trading Volume Activity on Stock Price

The results demonstrate that Trading Volume Activity has a negative and significant effect on stock prices. This indicates that higher trading intensity does not necessarily reflect positive market sentiment. The negative relationship suggests that increased trading volume during the post-tech winter period may reflect selling pressure rather than accumulation. High TVA may indicate portfolio rebalancing or risk aversion rather than optimism. From a signaling perspective, volume acts as a market reaction indicator. When rising volume is accompanied by declining prices, it may signal pessimistic sentiment. Portfolio adjustments during volatile periods can increase volume but simultaneously depress prices. Thus, trading activity in the technology sector reflects sentiment dynamics rather than purely positive investor demand [34].

3.6.6 The Mediating Role of Trading Volume Activity in the Relationship Between Liquidity and Stock Price

The mediation analysis indicates that Trading Volume Activity does not mediate the effect of liquidity on stock price. Although liquidity may influence stock price directly, it does not significantly affect price formation through trading activity. The low R-square value (1.1%) for TVA confirms that liquidity and profitability explain only a small portion of trading activity variation. Therefore, TVA is not an effective transmission mechanism between liquidity and stock price. This suggests that liquidity is interpreted more as a stability indicator rather than a transaction-triggering signal in the technology sector [35].

3.6.7 The Mediating Role of Trading Volume Activity in the Relationship Between Profitability and Stock Price

The findings also show that Trading Volume Activity does not mediate the relationship between profitability and stock price. Although profitability significantly affects both TVA and stock price directly, the indirect effect through TVA is statistically insignificant. This implies that investors respond to profitability primarily through direct valuation adjustments rather than through intensified trading. The declining average trading volume between 2022 and 2024 further supports this result, indicating that market activity is influenced more by macroeconomic and sentiment factors than by firm-level profitability alone[36]. Therefore, in the post-tech winter technology sector, profitability acts as a direct fundamental determinant of stock price, while Trading Volume Activity serves only as a limited market response indicator rather than a mediating mechanism.

4. Conclusion

This study investigates the effects of liquidity and profitability on stock prices, with Trading Volume Activity (TVA) as a mediating variable, in technology-sector firms listed on the Indonesia Stock Exchange during the post-tech winter period (2022–2024). Based on the empirical findings, several conclusions can be drawn. First, liquidity has a negative and significant effect on stock prices. This finding indicates that higher liquidity levels are not necessarily perceived positively by investors. Excessive liquidity may signal inefficient asset utilization and limited growth optimization, thereby reducing the attractiveness of technology stocks in the capital market. Second, profitability exerts a positive and significant influence on stock prices. This result confirms that earnings performance remains the primary fundamental factor considered by investors when evaluating firm value and future prospects, even amid post-tech winter uncertainty. Third, liquidity does not significantly affect Trading Volume Activity, whereas profitability positively and significantly increases trading activity. This suggests that profit-related information is more effective in stimulating investor transactions than liquidity indicators. Fourth, Trading Volume Activity negatively and significantly affects stock prices, indicating that increased trading during this period is more closely associated with selling pressure and portfolio adjustments and TVA does not mediate the relationships between liquidity, profitability, and stock prices. The results imply that stock price formation in technology firms is driven predominantly by direct fundamental performance rather than short-term trading mechanisms, supporting Portfolio Theory and Signaling Theory in conditions of heightened market uncertainty.

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