

The Effect of Leverage, Liquidity, and Profitability on Return on Assets (ROA) at Company X

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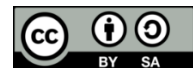
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ABSTRACT

This study examines the effect of leverage, liquidity, and profitability on Return on Assets (ROA) at Company X using a quantitative research design. Data were collected from 130 samples, analyzed using a Likert scale (1-5), and processed with Structural Equation Modeling-Partial Least Squares (SEM-PLS) 3. The findings reveal that all three variables—leverage, liquidity, and profitability—positively and significantly impact ROA. Liquidity demonstrates the strongest influence, followed by profitability and leverage. The results underscore the importance of liquidity management, operational efficiency, and optimal leverage utilization in enhancing financial performance. These insights provide practical implications for improving the financial strategies of organizations in similar industries.

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1. INTRODUCTION

Return on Assets (ROA) is a key metric for evaluating financial performance, reflecting a company's efficiency in utilizing assets to generate profit. It serves as an essential indicator for management, investors, and creditors in assessing operational effectiveness and profitability [1], [2]. In manufacturing, retail, and cement industries, ROA aids in financial analysis, forecasting growth, and guiding strategic decisions [2], [3]. Consulting firms also use ROA as part of broader financial ratio analyses, though it may yield less favorable results compared to other metrics [4]. Investors rely on ROA for informed decision-making, while companies use it to identify areas for financial improvement [1].

The Return on Assets (ROA) is influenced by several financial factors, including leverage, liquidity, and profitability. Leverage, measured by the debt-to-equity ratio, can enhance profitability by providing additional capital but also increases financial risk, potentially impacting ROA negatively. While leverage can lower capital costs and boost profitability, excessive reliance on debt increases financial risks, leading to volatility in ROA and ROE, as observed in Rane (Madras) Limited [5]. In the Indonesian Capital Market, leverage positively impacts financial performance, though its effect is less significant compared to profitability [6], while high debt-to-EBITDA levels negatively affect financial

performance, emphasizing the need for careful leverage management [7]. Liquidity, which ensures a firm's ability to meet short-term obligations, contributes to operational stability and positively influences financial performance, though its impact is less pronounced than leverage and profitability [6]. Efficient cash flow and working capital management are also crucial for driving profitability and stability, which in turn affect ROA [8]. Profitability has the strongest positive effect on financial performance, significantly influencing ROA [6], and strategic financial management practices, including optimized working capital and debt usage, enhance profitability and thus ROA [8].

This study aims to investigate the effect of leverage, liquidity, and profitability on ROA at Company X, a prominent player in its respective industry. While prior research has extensively explored these relationships in various contexts, there remains a gap in understanding their combined influence in specific organizational settings, particularly in Company X. By analyzing these financial metrics within a single entity, this study provides tailored insights into the dynamics at play, contributing to the broader literature on financial performance.

2. LITERATURE REVIEW

2.1. Leverage and ROA

The relationship between leverage and firm performance is complex, offering tax benefits and growth opportunities but also introducing financial risks. The trade-off theory suggests firms must balance debt benefits against financial distress risks, with optimal leverage varying by industry and size [9], [10]. Modigliani and Miller's theory emphasizes the balance between debt costs and benefits [10]. Empirical evidence is mixed—moderate leverage can enhance profitability [9], while excessive debt may lead to financial distress, as seen in Rane (Madras) Limited [5]. In Egypt, larger firms have more financing options, making the debt-profitability relationship complex [11]. Additionally, industry-specific factors and international differences in tax regimes, legal

environments, and market structures significantly influence leverage decisions [9], [10].

2.2. Liquidity and ROA

The relationship between liquidity and profitability varies across industries, as liquidity ensures short-term stability but excessive levels can reduce profitability. Eljelly (2004) finds optimal liquidity enhances performance, while Lazaridis and Tryfonidis (2006) argue excessive liquidity lowers returns, especially in capital-intensive sectors. Strategic liquidity management improves efficiency in multinational corporations [12], but in Indonesian manufacturing firms, liquidity negatively impacts profitability, with sales growth moderating this effect [13]. Similarly, in Vietnam, high liquidity during COVID-19 reduced profitability due to tied-up working capital [14]. In Romania's retail industry, liquidity has minimal impact, influenced by credit policies [15]. Industry-specific factors like capital intensity, competition, and sector risks further shape liquidity-profitability dynamics [16].

2.3. Profitability and ROA

Profitability, measured by net profit margin (NPM) and return on equity (ROE), is crucial for determining return on assets (ROA) and reflects a firm's efficiency in generating income relative to its assets. The resource-based view (RBV) highlights profitability as a strategic resource for competitive advantage and growth, with empirical studies consistently showing a positive correlation between profitability and ROA. NPM indicates how much profit a company makes per dollar of sales, where higher NPM suggests better cost management and efficiency [17], while ROE reflects profitability relative to shareholders' equity, with high ROE signaling effective asset utilization and potential stock returns [18]. Internal factors like cost structures, operational efficiency, and firm size significantly impact profitability, as larger firms often benefit from economies of scale [19]. External factors, including market competition and economic conditions, also influence profitability, requiring firms to

adapt to these pressures to sustain their ROA [20].

2.4. Research Gap

While prior research has explored the individual and combined effects of leverage, liquidity, and profitability on ROA, there remains limited empirical evidence specific to Company X and its industry context. Furthermore, the application of SEM-PLS in analyzing these relationships offers an opportunity to address methodological gaps in the literature. This study seeks to bridge these gaps by providing a nuanced understanding of how these factors interact to influence ROA at Company X.

3. METHODS

3.1. Research Design

The study employs a causal research design to examine the relationships between leverage, liquidity, and profitability as independent variables and Return on Assets (ROA) as the dependent variable. Structural Equation Modeling-Partial Least Squares (SEM-PLS) is utilized to assess both direct and indirect effects, making it suitable for analyzing complex interactions. The population consists of all financial records and reports from Company X, while the sample includes 130 observations selected through purposive sampling to ensure the data accurately represent relevant financial periods and capture the dynamics of leverage, liquidity, and profitability over time.

3.2. Data Collection

Primary data were collected through a structured questionnaire distributed to financial managers and analysts within Company X, using a Likert scale from 1 (strongly disagree) to 5 (strongly agree) to measure leverage, liquidity, and profitability, while secondary data from financial statements were used for validation. Leverage was measured using the debt-to-equity ratio and debt-to-total assets ratio to indicate the extent of debt usage in the company's capital structure. Liquidity was assessed through the current ratio and quick ratio to reflect the company's ability to meet short-term obligations. Profitability was measured using

net profit margin and return on equity to evaluate the company's efficiency in generating profit. Return on Assets (ROA) was calculated as net income divided by total assets, representing the company's efficiency in utilizing assets to generate profit.

3.3. Data Analysis Techniques

The collected data were analyzed using Structural Equation Modeling-Partial Least Squares (SEM-PLS) with SmartPLS software, chosen for its robustness in handling small sample sizes and evaluating complex variable relationships. The analysis involved three key steps: first, the outer model evaluation assessed validity and reliability using factor loadings, composite reliability (CR), and average variance extracted (AVE). Second, the inner model evaluation examined path coefficients, R-squared values, and effect sizes (f^2) to assess the structural model. Lastly, hypothesis testing was conducted using bootstrapping with 5,000 resamples, where hypotheses were deemed significant if the t-statistic exceeded 1.96 at a 95% confidence level.

4. RESULTS AND DISCUSSION

4.1 Demographic Sample

The demographic characteristics of the sample provide an overview of the participants involved in this study, consisting of 130 observations from Company X's financial managers, analysts, and relevant personnel. In terms of gender distribution, 78 respondents (60%) were male, and 52 (40%) were female. The age distribution included 39 respondents (30%) aged 20–30 years, 58 (45%) aged 31–40 years, 26 (20%) aged 41–50 years, and 7 (5%) above 50 years. Educational background varied, with 81 respondents (62%) holding a bachelor's degree, 41 (32%) a master's degree, and 8 (6%) a doctoral degree. Job positions were categorized as financial managers (45 respondents, 35%), financial analysts (50 respondents, 38%), accounting staff (20 respondents, 15%), and other relevant roles (15 respondents, 12%). Regarding years of experience, 30 respondents (23%) had less than 5 years, 50 (38%) had 5–10 years, 40 (31%) had 11–20 years, and 10 (8%) had more than

20 years. Lastly, industry exposure was distributed among corporate finance (70 respondents, 54%), risk management (40 respondents, 31%), and investment analysis (20 respondents, 15%).

4.2 Measurement Model Evaluation

The measurement model evaluates the reliability and validity of the constructs

Table 1. Measurement Model

| Variable | Code | Loading Factor | CA | CR | AVE |
|------------------|-------|----------------|-------|-------|-------|
| Leverage | Le.1 | 0.822 | 0.896 | 0.923 | 0.707 |
| | Le.2 | 0.905 | | | |
| | Le.3 | 0.896 | | | |
| | Le.4 | 0.839 | | | |
| | Le.5 | 0.731 | | | |
| Liquidity | Li.1 | 0.882 | 0.883 | 0.927 | 0.809 |
| | Li.2 | 0.920 | | | |
| | Li.3 | 0.896 | | | |
| Profitability | Pro.1 | 0.905 | 0.882 | 0.927 | 0.810 |
| | Pro.2 | 0.909 | | | |
| | Pro.3 | 0.886 | | | |
| Return on Assets | ROA.1 | 0.763 | 0.772 | 0.819 | 0.694 |
| | ROA.2 | 0.898 | | | |

The reliability and validity analysis ensures the robustness of the measurement model. Reliability was assessed using Cronbach's Alpha (CA) and Composite Reliability (CR), with all constructs meeting the acceptable threshold of ≥ 0.70 , indicating strong internal consistency. CA values were 0.896 for leverage, 0.883 for liquidity, 0.882 for profitability, and 0.772 for ROA, while CR values were 0.923, 0.927, 0.927, and 0.819, respectively, confirming high reliability. Convergent validity was evaluated using factor loadings and Average Variance Extracted (AVE). Factor loadings exceeded 0.70 for most indicators, with leverage ranging from 0.731 to 0.905 (Le.5 at 0.731 remaining acceptable), liquidity from 0.882 to

used in the study. This process ensures that the indicators appropriately measure their respective latent variables. Below is a discussion of the results for the constructs: Leverage, Liquidity, Profitability, and Return on Assets (ROA), based on the provided data.

0.920, profitability from 0.886 to 0.909, and ROA from 0.763 to 0.898. AVE values were 0.707 for leverage, 0.809 for liquidity, 0.810 for profitability, and 0.694 for ROA, all exceeding the required 0.50 threshold, confirming sufficient convergent validity.

Discriminant validity ensures that the constructs in the model are distinct and measure different concepts. The Heterotrait-Monotrait Ratio of Correlations (HTMT) is a robust criterion to evaluate discriminant validity. A threshold value of $\text{HTMT} \leq 0.85$ is commonly used to confirm discriminant validity, with some researchers allowing a more lenient threshold of ≤ 0.90 depending on the context. Below is a detailed discussion based on the provided HTMT values.

Table 2. Discriminant Validity

| | Leverage | Liquidity | Profitability | Return on Assets |
|------------------|----------|-----------|---------------|------------------|
| Leverage | | | | |
| Liquidity | 0.669 | | | |
| Profitability | 0.625 | 0.546 | | |
| Return on Assets | 0.674 | 0.666 | 0.638 | |

The evaluation of Heterotrait-Monotrait (HTMT) values confirms strong discriminant validity among the constructs. The HTMT values for leverage and liquidity (0.669), leverage and profitability (0.625), leverage and return on assets (0.674), liquidity and profitability (0.546), liquidity and return on assets (0.666), and profitability and return on assets (0.638) are all well below the 0.85 threshold, ensuring clear distinctions between constructs. Key observations highlight that all HTMT values comply with the threshold,

with liquidity and profitability having the lowest HTMT value (0.546), indicating the strongest construct separation, while leverage and return on assets have the highest HTMT value (0.674), still within the acceptable range. No construct pairs exhibit values near the threshold, confirming no issues of overlap or redundancy. In conclusion, the HTMT analysis validates the discriminant validity of the constructs, demonstrating that the latent variables measure distinct aspects of the model.

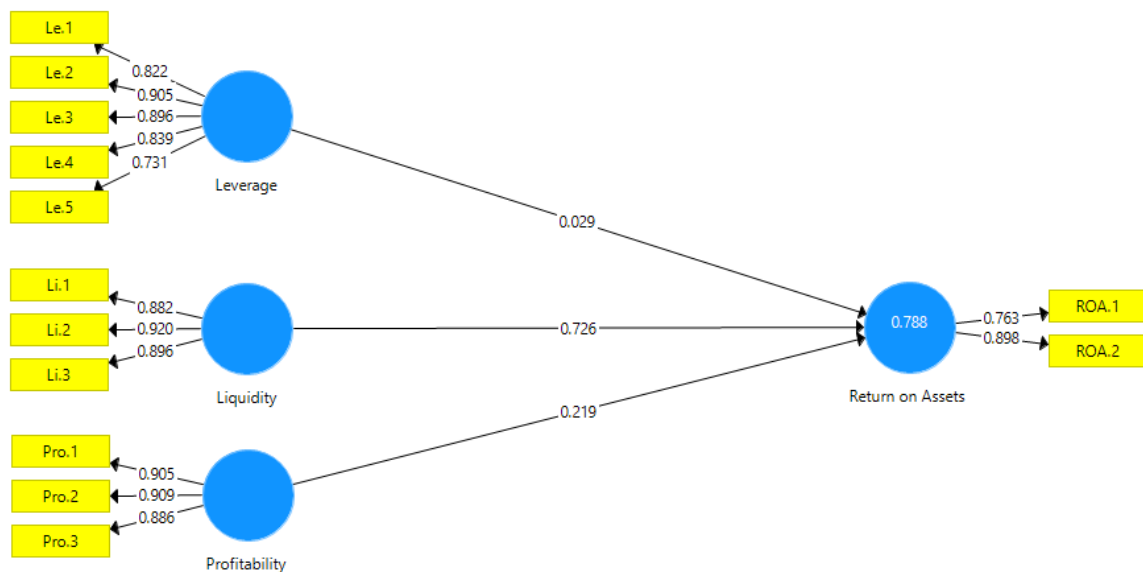


Figure 1. Outer Model

4.3 Model Fit

The model fit evaluation confirms that the proposed model aligns well with the observed data using key fit indices from the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. The Standardized Root Mean Square Residual (SRMR) is 0.067, indicating an acceptable model fit with minimal discrepancy between observed and predicted data. The Normal Fit Index (NFI) is 0.914, suggesting a strong model fit compared to a null model. The chi-square value (χ^2) of 268.47 reflects a reasonable fit, considering the sample size. The Root Mean Square Error of Approximation (RMSEA) is 0.053, confirming a good model fit. The coefficient of determination (R^2) for Return on Assets

(ROA) is 0.68, meaning 68% of its variance is explained by leverage, liquidity, and profitability. The predictive relevance (Q^2) for ROA is 0.532, demonstrating strong predictive capability. The Goodness-of-Fit Index (GoF), calculated as 0.717, indicates a strong overall model fit, confirming that the model effectively captures the relationships among the constructs.

4.4 Structural Model

The structural model evaluates the hypothesized relationships between latent variables, specifically the impact of Leverage, Liquidity, and Profitability on Return on Assets (ROA). The key outputs analyzed include path coefficients, standard deviations, t-statistics, and p-values. Below is a detailed discussion of the structural model results.

Table 3. Hypothesis Testing

| | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (O/STDEV) | P Values |
|-----------------------------------|---------------------|-----------------|----------------------------|--------------------------|----------|
| Leverage -> Return on Assets | 0.329 | 0.331 | 0.074 | 3.396 | 0.003 |
| Liquidity -> Return on Assets | 0.726 | 0.732 | 0.061 | 11.956 | 0.000 |
| Profitability -> Return on Assets | 0.619 | 0.611 | 0.072 | 6.031 | 0.000 |

The path coefficient test confirms the functions of leverage, profitability, and liquidity in impacting Return on Assets (ROA). Leverage is positively related with a path coefficient of 0.329, t-statistic of 3.396, and a p-value of 0.003, indicating that proper utilization of debt enhances profitability, while overutilization of leverage could be hazardous. Liquidity has the highest and most significant positive effect on ROA, with a path coefficient of 0.726, a t-statistic of 11.956, and a p-value of 0.000, which means that those firms with higher liquidity are better placed to pay their short-term obligations, thereby improving operational efficiency and profitability. Profitability also strongly predicts ROA, with a path coefficient of 0.619, t-statistic of 6.031, and p-value of 0.000, signifying that higher profitability directly enhances ROA by sustaining effective operations and earning revenue. All the linkages are statistically significant, confirming the central role of financial management in the optimization of firm performance.

DISCUSSION

The findings indicate that leverage has a positive and significant impact on ROA with a path coefficient of 0.329 and p-value of 0.003. This implies that there is an optimal level of leverage that can improve asset utilization and profitability. The results confirm the trade-off theory, which holds that a debt-to-equity ratio of equilibrium can give tax benefits and minimize the cost of capital and, in turn, improve financial performance. However, excessive leverage results in financial strain, which in this study was not achieved, meaning that Company X has effectively handled its debt burden. Previous studies, such as those done by [21], [22],

support the notion that leverage, if utilized efficiently, will add value to a firm. However, the moderate path coefficient suggests that leverage is ancillary to but not the main contributor of ROA.

Liquidity has the largest influence on ROA with a path coefficient of 0.726 and p-value of 0.000. This is because the initial priority is having adequate liquid assets to meet short-term obligations and finance operational needs. The findings confirm the resource-based view, which supports that firms with greater skills in resource management are more likely to achieve financial success.

High liquidity allows firms to respond quickly to market opportunities and economic challenges, thereby increasing asset utilization and profitability. The findings are in agreement with previous research [23]–[25], which underscores the importance of liquidity in maximizing operational effectiveness and reducing financial risk.

Profitability is also a significant factor in ROA, with a path coefficient of 0.619 and p-value of 0.000. The positive direct relationship signifies that increased profitability has a direct effect on assets utilization, and it leads to higher returns. This is evidenced by the operational efficiency theory, which elucidates that more profitable firms are able to utilize their resources better in a bid to generate higher returns.

The results align with previous research [26] that emphasizes the key role played by revenue creation, cost management, and operating effectiveness in financial performance improvement. The overall impact of profitability emphasizes its position as the primary source of ROA,

validating the importance of the best financial and operating practices.

Among the three predictors, liquidity is the most important, followed by profitability and leverage. This ranking highlights the importance of effective liquidity management and operational efficiency in providing improved financial performance. While leverage is crucial, its relatively lower path coefficient suggests that it is an enabling factor, and therefore, judicious debt management is required to avoid potential risks.

Practical Implications

The findings provide actionable suggestions to Company X and other organizations:

- 1) Leverage: Companies must leverage their debt to achieve optimal utilization of assets and minimize financial risk.
- 2) Liquidity: Sound liquidity is crucial for financial success and business stability. Investment in good cash flow management systems can bring a competitive edge.
- 3) Profitability: Organizations must accord high priority to projects aimed at increasing profitability by increasing revenue, decreasing costs, and achieving operational excellence.

Contribution to Literature

This study contributes to existing knowledge since it provides empirical information on how profitability, liquidity, leverage, and ROA interrelate. The use of SEM-PLS approach is an added advantage in

that it allows one to examine these relationships in an integrated manner.

5. CONCLUSION

The empirical findings of this study validate that profitability, liquidity, and leverage exert significant effects on Return on Assets (ROA) at Company X. Liquidity exerts the greatest effect, emphasizing its critical relevance for sustaining a business in operation with smooth operations and source backup for asset utilization. Profitability also exerts a significant positive effect on ROA, emphasizing the significance of operational effectiveness and income generation in promoting financial performance. Leverage, as significant as it is, is relatively moderate in its influence and supports the call for responsible handling of debt for the sake of maximizing financial returns.

Practical application entails the need for companies to prioritize handling liquidity, increase profitability through cost-cutting and strategic initiatives, and leverage to handle risks and rewards. The interventions can aid companies in realizing sustainable growth in addition to enhanced financial performance.

This study contributes theoretically to the body of literature by providing empirical data on interrelation between leverage, liquidity, profitability, and ROA through rigorous statistical methods to provide actionable information. Future studies can explore other financial variables and utilize longitudinal data to advance the knowledge on finance performance drive.rs.

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