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EVALUATING FINANCIAL PERFORMANCE OF MINING COMPANIES LISTED ON JAKARTA ISLAMIC INDEX

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ABSTRACT - In Indonesia, mining companies play a crucial role in supporting government economic initiatives. Consequently, assessing their financial performance becomes vital to ensure their viability and contribution to national economic goals. This study investigates the financial performance of mining companies listed on the Jakarta Islamic Index (JII) from 2017 to 2020. Utilizing purposive sampling, financial statements for four companies were obtained from their official websites, the OJK (Financial Services Authority), and the IDX (Indonesia Stock Exchange). A one-way ANOVA test was employed to compare the financial ratios across these companies. The analysis focused on liquidity, activity, solvency, and profitability ratios. The findings reveal that PT. Adaro Energy Tbk (ANDRO) achieved the highest performance, meeting five out of ten industry standard ratios. PT. Aneka Tambang Tbk (ANTM) and PT Bukit Asam Tbk (PTBA) followed, each meeting four ratios. PT. Vale Indonesia Tbk (INCO) demonstrated the lowest performance, achieving only two industry standard ratios. This research contributes to the understanding of financial performance variations within the JII's mining sector, highlights areas for potential improvement, and offers valuable insights for investors and policymakers
Keywords: Financial Performance, Liquidity Ratio, Activity Ratio, Solvency Ratio, Profitability Ratio

ABSTRAK – Mengevaluasi Kinerja Keuangan Perusahaan Pertambangan yang Terdaftar pada Jakarta Islamic Index. *Di Indonesia, perusahaan pertambangan memiliki peran penting dalam mendukung inisiatif ekonomi pemerintah. Konsekuensinya, penilaian kinerja keuangan mereka menjadi vital untuk memastikan kelangsungan hidup dan kontribusi mereka terhadap tujuan ekonomi nasional. Penelitian ini menyelidiki kinerja keuangan perusahaan pertambangan yang terdaftar di Jakarta Islamic Index (JII) dari tahun 2017 hingga 2020. Penelitian ini menggunakan metode purposive sampling untuk memilih empat perusahaan pertambangan yang terdaftar di JII. Laporan keuangan perusahaan diperoleh dari situs web resmi mereka, OJK (Otoritas Jasa Keuangan), dan IDX (Bursa Efek Indonesia). Analisis data menggunakan uji ANOVA satu arah untuk membandingkan rasio keuangan antar perusahaan, dengan fokus pada rasio likuiditas, aktivitas, solvabilitas, dan profitabilitas. Hasil penelitian menunjukkan bahwa PT. Adaro Energy Tbk (ANDRO) mencapai kinerja tertinggi, dengan memenuhi lima dari sepuluh rasio standar industri. Diikuti oleh PT. Aneka Tambang Tbk (ANTM) dan PT Bukit Asam Tbk (PTBA) yang masing-masing memenuhi empat rasio. PT. Vale Indonesia Tbk (INCO) menunjukkan kinerja terendah, hanya mencapai dua rasio standar industri. Penelitian ini memberikan gambaran yang jelas mengenai kinerja keuangan perusahaan pertambangan yang terdaftar di JII. Hasil penelitian ini dapat membantu investor dan pembuat kebijakan dalam mengambil keputusan terkait sektor pertambangan.*
Kata Kunci: *Kinerja Keuangan, Rasio Likuiditas, Rasio Aktivitas, Rasio Solvabilitas, Rasio Profitabilitas.*

INTRODUCTION

Indonesia, renowned for its abundant natural resources, has consistently attracted investment, particularly within the mining sector. This sector, as delineated by Law No. 4/2009, Article 1 Paragraph 1, plays a crucial role in the nation's economic architecture. Mining companies, engaged in the exploration, extraction, processing, and sale of valuable minerals and hydrocarbons, not only buttress government economic initiatives but are also expected to sustain robust financial health to make a substantial contribution to the economy (Arsita, 2021; Ibrahim, 2018).

The operational success of a mining company is largely determined by the analysis of its financial statements, which serve as a reflection of its performance over a specific period (Dewi, 2017). Financial performance, a key indicator of a company's profitability and sustainability, is typically evaluated using a variety of financial ratios (Sucipto, 2003; Brigham & Husten, 2010). These ratios, classified into liquidity, activity, solvency, and profitability categories, provide a comprehensive view of a company's ability to meet its short-term obligations, efficiently utilize its assets, manage its debt, and generate profits (Gerald in Kasmir, 2018).

While prior research has explored the financial dynamics of Indonesia's mining sector (Anggraeni, 2019; Herdianand & Triyonowati, 2017), a significant gap exists regarding the period leading up to the global pandemic. This period, marked by economic uncertainty, serves as a critical test of the sector's resilience (Syaifullah et al., 2020). Existing studies offer valuable insights but fail to capture the pre-pandemic conditions that shaped the current state of the industry (Anggraeni, 2019; Herdianand & Triyonowati, 2017).

This study addresses this gap by analyzing the financial performance of four mining companies listed on the Jakarta Islamic Index (JII) from 2017 to 2020, directly preceding the pandemic. The companies under scrutiny—PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO)—will be evaluated to understand their financial health and preparedness for the impending global crisis. Their financial performance during the period is displayed in Table 1.

This research holds significant value for several reasons. Firstly, its focus on the pre-pandemic period offers a unique perspective on the sector's inherent strength and adaptability. Secondly, the findings provide a crucial benchmark

for assessing the impact of the pandemic on the industry's financial standing. Finally, the insights gained can be directly applied to the current post-pandemic environment, informing investment decisions and shaping strategies for long-term success.

Table 1. Financial Performance of the JII Mining Sector (2017-2020)

No	Company Name	Financial Performance	Year			
			2017	2018	2019	2020
1	PT. Aneka Tambang Tbk (ANTM)	Total Assets	30,014.27	33,306.39	30,194.91	31,729.51
		Net income	-9,973.53	-18,843.00	-24,057.59	-18,986.35
		Total liabilities	15,523.87	13,567.16	12,061.49	12,690.06
2	PT. Bukit Asam Tbk (PTBA)	Total Assets	21,987.48	24,172.93	26,098.05	24,056.76
		Net income	5,899.00	-7,007.84	-439,012.00	22,115.78
		Total Liabilities	8,187.50	7,903.24	7,675.23	7,117.56
3	PT. Vale Indonesia Tbk (INCO)	Total Assets	2,184.56	2,202.45	2,222.69	2,314.66
		Net income	-585,684.00	-443,874.00	-374,434,00	-267,529.00
		Total liabilities	365,192.00	318,275.00	280,995.00	294,270.00
4	PT. Adaro Energy Tbk (ADRO)	Total Assets	6,814,147.00	7,060,755.00	7,217,105.00	6,381,566.00
		Net income	536,438.00	477,541.00	435,002.00	158,505.00
		Total liabilities	2,722,520.00	2,758,063.00	3,233,710.00	2,429,852.00

(Source: IDX, author processed, 2022)

By delving into the financial performance of these key players during a critical juncture, this study contributes a contemporary and comprehensive analysis to the existing body of knowledge. This analysis will not only illuminate the sector's resilience but also provide valuable information for investors seeking to navigate the current economic landscape.

Following this introduction, the study will discuss the importance of financial performance analysis in the mining sector before conducting a review of relevant literature to identify research gaps. Subsequently, it will present the methodology for assessing the financial ratios of the selected companies and discuss the findings. The final section will interpret the implications of these findings for the mining sector and the broader Indonesian economy, thereby contributing to informed decision-making by investors and stakeholders alike.

LITERATURE REVIEW

The mining industry is a critical component of the global economy, and its financial health is of paramount importance to investors, stakeholders, and policymakers. Financial ratios are essential tools for evaluating the performance of mining companies, providing insights into their operational efficiency, profitability, and financial stability (Mariana & Ibrahim, 2022). This report synthesizes key literature on the most common financial ratios used in the mining sector, the impact of the COVID-19 pandemic on industrial metals markets, and a case study on the financial performance of a mining company.

Impact of COVID-19 on the Mining Sector

The COVID-19 pandemic has had a profound impact on the mining sector, affecting demand for metals, altering the post-pandemic landscape, and prompting comparisons with the Global Financial Crisis (GFC). The downturn has led to questions about the speed and size of the recovery post-lockdown, while the long-term effects on the mining sector are still being evaluated. The pandemic has resulted in significant market capitalization losses and economic challenges for the industry, but the sector's strong culture of safety and health awareness has facilitated its response to the crisis. Despite the challenges, some areas of the mining sector, such as gold production in Nevada, have seen increased cash flows due to higher commodity prices. Companies have adapted by implementing safety measures and transitioning to remote work where possible. The pandemic has also highlighted the importance of collaboration with local communities and the use of technology to ensure compliance with health guidelines.

Financial Performance Analysis in the Mining Industry

Financial ratios are essential tools for analyzing the profitability and cost management of mining companies. Key ratios include the quick ratio, operating profit margin, and return on equity (ROE), which provide insights into a company's liquidity, cost management, and profitability (Muarif, Ibrahim, & Amri, 2021). Historically, the mining industry has shown average ROEs between 5% and 9%, with the best-performing companies achieving ROEs of 15% or more. An alternative to ROE is the return on assets (ROA), another important metric for evaluating financial performance (Mailinda, Ibrahim, & Zainul, 2018).

A study by Halim, Sembel, and Malau (2022) focused on the financial performance of PT. Adaro Energy Indonesia Tbk (ADRO), a coal mining company listed on the Indonesia Stock Exchange (IDX). The research employed financial ratio analysis to compare ADRO's performance with that of its competitors and industry averages, examining factors affecting its stock return and profitability. The study used a quantitative research method and purposive sampling, analyzing 40 quarterly financial reports from 2012 to 2021. The findings indicated that ADRO exhibited remarkable financial performance in terms of profitability and liquidity compared to its competitors. However, concerns were raised about ADRO's asset-use efficiency. The research also revealed that fundamental financial factors had a limited effect on stock returns, with profitability being the only aspect significantly affected by such factors. This study provides investors with insights into how stock returns and financial performance are influenced by fundamental financial factors in the coal mining industry. It also considers potential macroeconomic variables as determinants in predicting coal mining company stock returns.

Economic Value Added (EVA) Method

The Economic Value Added (EVA) method is another approach used to analyze the financial performance of mining companies. This method assesses the value created by a company beyond the required return of its shareholders and can be a more comprehensive measure of a company's profitability. Studies have applied the EVA method to evaluate the financial performance of specific mining companies, such as PT. Vale Indonesia Tbk, providing insights into their economic value creation over time.

Supply Chain and Market Dynamics

The pandemic has also affected supply chains and led to discussions on deglobalization, with implications for the mining sector. The disruption of supply and production operations due to efforts to contain the virus has had an impact on commodity prices. However, the removal of supply on a large scale, as seen with delays to production and development projects announced by some of the world's biggest mining groups, could potentially impact prices. Investor confidence remains a challenge for the commodity markets, and recovery is contingent on the stabilization of market conditions.

The literature underscores the importance of financial ratios in evaluating the performance of mining companies. The impact of the COVID-19 pandemic on

the mining sector has been significant, affecting prices, supply chains, and market dynamics. The case study of PT. Adaro Energy Indonesia Tbk offers a detailed analysis of financial performance and the influence of fundamental financial factors on stock returns. These findings are crucial for investors and stakeholders in making informed decisions about investments in the mining sector, especially in the context of the post-pandemic economic recovery and the ongoing green transition.

METHODOLOGY

This study utilizes a descriptive quantitative approach to examine the financial performance of mining companies listed on the Jakarta Islamic Index (JII) from 2017 to 2020. While initially seven mining companies were listed on the JII during the observation period, only four companies: PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO), remained consistently listed throughout the four years. This purposive sampling approach ensures that the analysis focuses on companies with consistent data availability.

Financial statement data were collected from multiple authoritative sources, including the official websites of the respective companies, the Financial Services Authority (OJK), and the Indonesia Stock Exchange (IDX). This approach ensures the reliability and accuracy of the financial data used for analysis. To identify and analyze differences in financial performance among the four companies, a one-way ANOVA test was employed. This statistical test is suitable for comparing the means of independent groups (companies in this case). This study employs a comprehensive financial ratio analysis technique, encompassing various categories of financial ratios to provide a multi-dimensional view of the companies' financial performance:

Liquidity Ratio

$$\text{Current Ratio} = \frac{current\ assets}{current\ liabilities}\ X\ 100\%$$

$$\text{Quick Ratio} = \frac{cash + receivable + Effect}{current\ liabilities}\ X\ 100\%$$

$$\text{Cash Ratio} = \frac{cash + Effect}{current\ liabilities}\ X\ 100\%$$

Activity Ratio

$$\text{Inventory Turnover } = \frac{sales}{inventory} \; X \; 100\%$$

$$\text{Total Assets Turnover (TAT)} = \frac{sales}{Total\ assets} \; X \; 100\%$$

Solvency Ratio

$$\text{Debt to Aset Ratio (DAR)} = \frac{Total\ debt}{Total\ Aset} \; X \; 100\%$$

$$\text{Debt to Equity Ratio (DER)} = \frac{Total\ debt}{Equity} \; X \; 100\%$$

Profitability Ratio

$$\text{Net Profit Margin (NPM)} = \frac{net\ income\ after\ tax}{net\ sales} \; X \; 100\%$$

$$\text{Return on Investment (ROI)} = \frac{net\ income\ after\ tax}{Total\ Assets} \; X \; 100\%$$

$$\text{Return on Equity (ROE)} = \frac{net\ income}{Equity} \; X \; 100\%$$

RESULT AND DISCUSSION

Liquidity Ratio

Liquidity ratios are an important tool for assessing a company's short-term financial health and ability to meet its current obligations. The three main liquidity ratios analyzed in this study are the current ratio, quick ratio, and cash ratio. These ratios provide insight into the mining sector companies' liquidity positions and how they compare to each other. The liquidity ratio analysis reveals that PT. Vale Indonesia Tbk (INCO) and PT. Aneka Tambang Tbk (ANTM) have the most robust liquidity among the mining companies studied, with high current, quick, and cash ratios. While PT Bukit Asam Tbk (PTBA) and PT. Adaro Energy Tbk (ADRO) have lower ratios, they still maintain sufficient liquidity. Monitoring liquidity ratios over time is crucial for these companies to ensure they can meet short-term obligations and maintain financial stability.

Current Ratio

The average current ratio for PT. Aneka Tambang Tbk (ANTM) during the observation period was the highest at 145.57%, indicating a strong liquidity position with ample current assets to cover current liabilities. PT. Vale Indonesia Tbk (INCO), PT Bukit Asam Tbk (PTBA), and PT. Adaro Energy Tbk (ADRO) had significantly lower current ratios of 11.47%, 2.37%, and 1.94% respectively, suggesting tighter liquidity positions.

Table 2. Calculation of Curent Ratio

No	Company Code	Year	Current Assets	Current Liabilities	Curent Ratio	%
1	PT. Aneka Tambang Tbk (ANTM)	2017	9,001.94	5,552,463.00	162.13	145.57
		2018	7,342.04	5,561,930.00	154.19	
		2019	7,665.24	5,293,238.00	144.81	
		2020	9,150.51	7,553.26	121.15	
2	PT Bukit Asam Tbk (PTBA)	2017	11,117.75	4,513.23	2.46	2.37
		2018	11,739.34	4,935.70	2.38	
		2019	11,680.00	4,691.25	2.49	
		2020	8,364.36	3,872.46	2.16	
3	PT. Vale Indonesia Tbk (INCO)	2017	597.06	68.36	8.73	11.47
		2018	631.00	84.16	7.50	
		2019	588.31	39.14	15.03	
		2020	695.97	47.62	14.62	
4	PT. Adaro Energy Tbk (ADRO)	2017	1,979.16	773.30	2.56	1.94
		2018	1,600.29	816.44	1.96	
		2019	2,109.92	1,232.60	1.72	
		2020	1,731.86	1,144.92	1.51	

Quick Ratio

PT. Vale Indonesia Tbk (INCO) had the highest average quick ratio at 364%, demonstrating a very liquid position with substantial quick assets (cash, receivables, short-term investments) relative to current liabilities. The other companies had lower quick ratios: PT Bukit Asam Tbk (PTBA) at 200%, PT. Adaro Energy Tbk (ADRO) at 195%, and PT. Aneka Tambang Tbk at 139%, but still maintained adequate liquidity.

Table 3. Calculation of Quick Ratio

No	Company Code	Year	Cash	Receivable	Effect	Current liabilities	Quick Ratio	%
1	PT. Aneka Tambang Tbk (ANTM)	2017	5,550,677,020	1,377,350,115	2,403,076,473	5,552,462,635	1.68	139
		2018	4,299,068,085	974,909,648	2,403,076,473	5,511,744,144	1.39	
		2019	3,636,243,080	1,430,500,901	2,403,076,473	5,293,238,393	1.41	
		2020	3,984,387,647	1,812,981,246	2,403,076,473	7,553,261,301	1.09	

2	PT Bukit Asam Tbk (PTBA)	2017	3,555,406	5,343,708	1,152,066	4,396,619	2.29	200
		2018	6,301,163	2,781,567	1,152,066	4,935,696	2.07	
		2019	4,756,801	2,482,837	1,152,066	4,691,251	1.79	
		2020	4,340,947	1,578,867	1,152,066	3,872,457	1.83	
3	PT.Vale Indonesia Tbk (INCO)	2017	221,699	165,577	136,413	129,300	4.05	364
		2018	310,153	124,248	136,413	175,340	3.26	
		2019	249,035	107,295	136,413	136,552	3.61	
		2020	388,682	60,040	136,413	160,710	3.64	
4	PT. Adaro Energy Tbk (ADRO)	2017	1,206,848	321,447	342,940	773,302	2.42	195
		2018	927,896	376,930	342,940	816,443	2.02	
		2019	1,576,191	319,442	342,940	1,232,601	1.82	
		2020	1,173,703	248,243	342,940	1,144,923	1.54	

Cash Ratio

PT. Vale Indonesia Tbk (INCO) again had the strongest cash ratio at 285% on average, highlighting its significant cash reserves to cover current obligations. PT. Adaro Energy Tbk (ADRO), PT Bukit Asam Tbk (PTBA), and PT. Aneka Tambang Tbk followed with cash ratios of 161%, 132%, and 116% respectively, all exceeding 100% and reflecting solid cash positions.

Table 4. Calculation of Cash Ratio

No	Company Code	Year	Cash	Effect	Current liabilities	Cash Ratio	%
1	PT. Aneka Tambang Tbk (ANTM)	2017	5,550,677,020	2,403,076,473	5,552,462,635	1.43	116
		2018	4,299,068,085	2,403,076,473	5,511,744,144	1.22	
		2019	3,636,243,080	2,403,076,473	5,293,238,393	1.14	
		2020	3,984,387,647	2,403,076,473	7,553,261,301	0.85	
2	PT Bukit Asam Tbk (PTBA)	2017	3,555,406	1,152,066	4,396,619	1.07	132
		2018	6,301,163	1,152,066	4,935,696	1.51	
		2019	4,756,801	1,152,066	4,691,251	1.26	
		2020	4,340,947	1,152,066	3,872,457	1.42	
3	PT. Vale Indonesia Tbk (INCO)	2017	221,699	136,413	129,300	2.77	285
		2018	310,153	136,413	175,340	2.55	
		2019	249,035	136,413	136,552	2.82	
		2020	388,682	136,413	160,710	3.27	
4	PT. Adaro Energy Tbk (ADRO)	2017	1,206,848	342,940	773,302	2.00	161
		2018	927,896	342,940	816,443	1.56	
		2019	1,576,191	342,940	1,232,601	1.56	
		2020	1,173,703	342,940	1,144,923	1.32	

Activity Ratio

Activity ratios are important financial metrics that measure how efficiently a company uses its assets to generate sales and cash. Two key activity ratios

analyzed in this research are inventory turnover and total asset turnover (TAT). These ratios provide insights into the mining sector companies' operational efficiency and asset utilization. The activity ratio analysis reveals that PT. Adaro Energy Tbk (ADRO) excels in inventory management, while PT Bukit Asam Tbk (PTBA) leads in overall asset utilization among the mining companies studied. PT. Aneka Tambang Tbk (ANTM) and PT. Vale Indonesia Tbk (INCO) have opportunities to optimize their inventory and asset management to boost operational efficiency. Regularly monitoring activity ratios helps these companies identify areas for improvement and make data-driven decisions to enhance their financial performance.

Inventory Turnover

PT. Adaro Energy Tbk (ADRO) had the highest average inventory turnover at 28.87 times per year, indicating efficient inventory management and strong sales relative to inventory levels. PT Bukit Asam Tbk (PTBA), PT. Aneka Tambang Tbk (ANTM), and PT. Vale Indonesia Tbk (INCO) had lower inventory turnover ratios of 16.94, 12.79, and 5.45 times respectively, suggesting potential for improvement in inventory management.

Table 5. Calculation of Inventory Turnover

No	Company Code	Year	Sales	Inventory	Inventory Turnover	%
1	PT. Aneka Tambang Tbk (ANTM)	2017	12,653,619,205	1,257,785,082	10.06	12.79
		2018	25,241,268,367	2,027,731,541	12.45	
		2019	32,718,542,699	1,796,301,441	18.21	
		2020	27,372,461,091	2,626,022,280	10.42	
2	PT. Bukit Asam Tbk (PTBA)	2017	19,471,030	1,156,012	16.84	16.94
		2018	21,166,993	1,551,135	13.65	
		2019	21,787,564	1,383,064	15.75	
		2020	17,325,192	805,436	21.51	
3	PT. Vale Indonesia Tbk (INCO)	2017	629,334	117,726	5.35	5.45
		2018	776,900	131,779	5.90	
		2019	782,012	147,961	5.29	
		2020	764,744	144,487	5.29	
4	PT. Adaro Energy Tbk (ADRO)	2017	3,258,333	85,466	38.12	28.87
		2018	3,619,751	112,005	32.32	
		2019	3,457,154	121,030	20.94	
		2020	2,534,842	105,134	24.11	

Total Asset Turnover (TAT)

PT Bukit Asam Tbk (PTBA) achieved the highest average TAT at 0.83 times, demonstrating effective utilization of total assets to generate sales. PT. Aneka Tambang Tbk (ANTM), PT. Adaro Energy Tbk (ADRO), and PT. Vale Indonesia Tbk (INCO) had lower TAT ratios of 0.78, 0.47, and 0.33 times respectively, indicating room for enhancing asset productivity.

Table 6. Calculation of Total Assets Turnover

No	Company Code	Year	Sales	Total Assets	TAT	%
1	PT Aneka Tambang Tbk (ANTM)	2017	12,653,619,205	30,014,273,452	0.42	0.78
		2018	25,241,268,367	33,306,390,807	0.76	
		2019	32,718,542,699	30,194,907,730	1.08	
		2020	27,372,461,091	31,729,512,995	0.86	
2	PT. Bukit Asam Tbk (PTBA)	2017	19,471,030	21,987,482	0.89	0.83
		2018	21,166,993	24,172,933	0.88	
		2019	21,787,564	26,098,052	0.83	
		2020	17,325,192	24,056,755	0.72	
3	PT. Vale Indonesia Tbk (INCO)	2017	629,334	2,184,559	0.29	0.33
		2018	776,900	2,202,452	0.35	
		2019	782,012	2,222,688	0.35	
		2020	764,744	2,314,658	0.33	
4	PT. Adaro Energy Tbk (ADRO)	2017	3,258,333	6,814,147	0.48	0.47
		2018	3,619,751	7,060,755	0.51	
		2019	3,457,154	7,127,105	0.49	
		2020	2,534,842	6,381,566	0.40	

Solvency Ratio

Solvency ratios are crucial financial metrics that assess a company's ability to meet its long-term debt obligations and maintain a sustainable capital structure. Two key solvency ratios analyzed in this research are the debt-to-assets ratio (DAR) and the debt-to-equity ratio (DER). These ratios provide insights into the mining sector companies' financial leverage and risk. The solvency ratio analysis reveals that PT. Adaro Energy Tbk (ADRO) and PT. Aneka Tambang Tbk (ANTM) have higher financial leverage compared to PT Bukit Asam Tbk (PTBA) and PT. Vale Indonesia Tbk (INCO). While higher leverage can potentially amplify returns, it also increases financial risk. Companies with lower solvency ratios, such as PT. Vale Indonesia Tbk (INCO), have more financial flexibility and lower risk of default. Monitoring solvency ratios over time helps these companies maintain an optimal capital structure and manage their long-term financial health.

Debt-to-Assets Ratio (DAR)

PT. Adaro Energy Tbk (ADRO) had the highest average DAR at 40%, indicating that a significant portion of its assets are financed by debt. PT. Aneka Tambang Tbk (ANTM) followed closely with an average DAR of 38%, while PT Bukit Asam Tbk (PTBA) and PT. Vale Indonesia Tbk (INCO) had lower DARs of 32% and 14% respectively, suggesting lower financial risk.

Table 7. Calculation of Debt to Asset Ratio

No	Company code	Year	Total debt	Total Assets	DAR	%
1	PT Aneka Tambang Tbk (ANTM)	2017	11,523,869,935	30,014,273,452	0.38	38
		2018	13,567,160,084	33,306,390,807	0.41	
		2019	12,061,488,555	30,194,907,730	0.40	
		2020	12,690,063,970	31,729,512,995	0.40	
2	PT Bukit Asam Tbk (PTBA)	2017	8,187,497	21,987,482	0.37	32
		2018	7,903,237	24,172,933	0.33	
		2019	7,675,226	26,098,052	0.29	
		2020	7,117,559	24,056,755	0.30	
3	PT. Vale Indonesia Tbk (INCO)	2017	365,192	2,184,559	0.17	14
		2018	318,725	2,202,452	0.14	
		2019	280,995	2,222,688	0.13	
		2020	294,270	2,314,658	0.13	
4	PT. Adaro Energy Tbk (ADRO)	2017	2,772,520	6,814,147	0.41	40
		2018	2,758,063	7,060,755	0.39	
		2019	3,233,710	7,127,105	0.45	
		2020	2,429,852	6,381,566	0.38	

Debt-to-Equity Ratio (DER)

PT. Adaro Energy Tbk (ADRO) also had the highest average DER at 69%, indicating a higher proportion of debt relative to equity in its capital structure. PT. Aneka Tambang Tbk (ANTM) had the second-highest DER at 66%, followed by PT Bukit Asam Tbk (PTBA) at 48% and PT. Vale Indonesia Tbk (INCO) at 17%, reflecting varying degrees of financial leverage.

Table 8. Calculation of Debt to Equity Ratio

No	Company code	Year	Total Debt	Equity	DER	%
1	PT Aneka Tambang Tk (ANTM)	2017	11,523,869,935	18,490,403,517	0.62	66
		2018	13,567,160,084	19,739,230,723	0.69	
		2019	12,061,488,555	18,133,419,175	0.67	
		2020	12,690,063,970	19,039,449,025	0.67	
2	PT Bukit Asam Tbk (PTBA)	2017	8,187,497	13,799,985	0.59	48
		2018	7,903,237	16,269,696	0.49	
		2019	7,675,226	18,422,826	0.42	

		2020	7,117,559	16,939,196	0.42	
3	PT.Vale Indonesia Tbk (INCO)	2017	365,192	1,819,367	0.20	17
		2018	318,725	1,883,727	0.17	
		2019	280,995	1,941,693	0.14	
		2020	294,270	2,020,388	0.15	
4	PT. Adaro Energy Tbk (ADRO)	2017	2,772,520	4,091,627	0.68	69
		2018	2,758,063	4,302,692	0.64	
		2019	3,233,710	3,983,395	0.81	
		2020	2,429,852	3,951,714	0.61	

Profitability Ratio

Profitability ratios are essential financial metrics that measure a company's ability to generate profits relative to its revenue, assets, and equity. Three key profitability ratios analyzed in this research are the net profit margin (NPM), return on investment (ROI), and return on equity (ROE). These ratios provide insights into the mining sector companies' overall financial performance and efficiency. The profitability ratio analysis reveals that PT Bukit Asam Tbk (PTBA) and PT. Adaro Energy Tbk (ADRO) have the strongest overall profitability among the mining companies studied, as evidenced by their higher NPM, ROI, and ROE ratios. PT. Aneka Tambang Tbk (ANTM) and PT. Vale Indonesia Tbk (INCO) have opportunities to enhance their profitability by focusing on cost management, asset utilization, and equity productivity. Regularly monitoring profitability ratios helps these companies identify areas for improvement and make data-driven decisions to optimize their financial performance.

Net Profit Margin (NPM)

PT Bukit Asam Tbk (PTBA) had the highest average NPM at 20%, indicating strong profitability and cost management. PT. Adaro Energy Tbk (ADRO), PT. Vale Indonesia Tbk (INCO), and PT. Aneka Tambang Tbk (ANTM) had lower NPMs of 12%, 6%, and 2% respectively, suggesting potential for improvement in cost control and pricing strategies.

Table 9. Calculation of Net Profit Margin

No	Company Code	Year	Net Income After Tax	Net sales	NPM	%
1	PT Aneka Tambang Tbk (ANTM)	2017	136,503,269	12,653,619,205	0.01	2
		2018	874,426,593	25,241,268,367	0.03	
		2019	193,852,031	32,718,542,699	0.01	
		2020	1,149,353,693	27,372,461,091	0.04	
2		2017	4,547,232	19,471,030	0.23	20

	PT Bukit Asam Tbk (PTBA)	2018	5,121,112	21,166,993	0.24	
		2019	4,040,394	21,787,564	0.19	
		2020	2,407,927	17,325,192	0.14	
3	PT.Vale Indonesia Tbk (INCO)	2017	-15,271	629,334	-0.02	6
		2018	60,512	776,900	0.08	
		2019	57,400	782,012	0.07	
		2020	82,819	764,744	0.11	
4	PT. Adaro Energy Tbk (ADRO)	2017	536,438	3,258,333	0.16	12
		2018	477,541	3,619,751	0.13	
		2019	435,002	3,457,154	0.13	
		2020	158,505	2,534,842	0.06	

Return on Investment (ROI)

PT. Adaro Energy Tbk (ADRO) achieved the highest average ROI at 58%, demonstrating effective utilization of assets to generate profits. PT. Vale Indonesia Tbk (INCO), PT Bukit Asam Tbk (PTBA), and PT. Aneka Tambang Tbk (ANTM) had lower ROIs of 23%, 17%, and 2% respectively, indicating room for enhancing asset productivity.

Table 10. Calculation of Return on Investment

No	Company Code	Year	Net Income After Tax	Total Aset	ROI	%
1	PT Aneka Tambang Tbk (ANTM)	2017	136,503,269	30,014,273,452	0.00	2
		2018	874,426,593	33,306,390,807	0.03	
		2019	193,852,031	30,194,907,730	0.01	
		2020	1,149,353,693	31,729,512,995	0.04	
2	PT Bukit Asam Tbk (PTBA)	2017	4,547,232	21,987,482	0.21	17
		2018	5,121,112	24,172,933	0.21	
		2019	4,040,394	26,098,052	0.15	
		2020	2,407,927	24,056,755	0.10	
3	PT. Vale Indonesia Tbk (INCO)	2017	-15,271	2,184,559	-0.01	23
		2018	60,512	2,202,452	0.03	
		2019	57,400	2,222,688	0.03	
		2020	82,819	2,314,658	0.04	
4	PT. Adaro Energy Tbk (ADRO)	2017	536,438	6,814,147	0.08	58
		2018	477,541	7,060,755	0.07	
		2019	435,002	7,127,105	0.06	
		2020	158,505	6,381,566	0.02	

Return on Equity (ROE)

PT Bukit Asam Tbk (PTBA) had the highest average ROE at 25%, reflecting strong returns for shareholders. PT. Adaro Energy Tbk (ADRO), PT. Aneka Tambang Tbk (ANTM), and PT. Vale Indonesia Tbk (INCO) had lower ROEs

of 9%, 3%, and 2.2% respectively, suggesting potential for improving equity utilization and profitability.

Table 11. Calculation of Return on Equity

No	Company Code	Year	Net income	Equity	ROE	%
1	PT Aneka Tambang Tbk (ANTM)	2017	136,503,269	18,490,403,517	0.01	3
		2018	874,426,593	19,739,230,723	0.04	
		2019	193,852,031	18,133,419,175	0.01	
		2020	1,149,353,693	19,039,449,025	0.06	
2	PT Bukit Asam Tbk (PTBA)	2017	4,547,232	13,799,985	0.33	25
		2018	5,121,112	16,269,696	0.31	
		2019	4,040,394	18,422,826	0.22	
		2020	2,407,927	16,939,196	0.14	
3	PT. Vale Indonesia Tbk (INCO)	2017	-15,271	1,819,367	-0.01	2.2
		2018	60,512	1,883,727	0.03	
		2019	57,400	1,941,693	0.03	
		2020	82,819	2,020,388	0.04	
4	PT. Adaro Energy Tbk (ADRO)	2017	536,438	4,091,627	0.13	9
		2018	477,541	4,302,692	0.11	
		2019	435,002	3,983,395	0.11	
		2020	158,505	3,951,714	0.04	

Normality and Homogeneity Tests

Before conducting hypothesis tests, it is essential to assess the normality and homogeneity of the data. The normality test determines whether the data follows a normal distribution, which influences the choice of appropriate statistical tests (e.g., ANOVA or non-parametric tests). The homogeneity test assesses whether the variances of the data across different groups are equal.

Normality Test

The Kolmogorov-Smirnov test was used to assess the normality of the data, with a significance level of 0.05. If the p-value is greater than 0.05, the data is considered normally distributed. The results of the normality test, as shown in Table 12, indicate that all the financial performance variables (Current ratio, Quick ratio, Cash ratio, Inventory turnover, TAT, DAR, DER, NPM, ROI, and ROE) have p-values greater than 0.05, suggesting that the data follows a normal distribution. Therefore, the One Way ANOVA test can be used for further analysis.

Table 12. Normality Test

Financial Performance Variables	Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)	Description
Current ratio	1.246	0.090	Normal
Quick ratio	0.201	0.083	Normal
Cash ratio	1.013	0.256	Normal
Inventory turnover	0.134	0.150	Normal
TAT	0.206	0.070	Normal
DAR	1.012	0.258	Normal
DER	0.972	0.302	Normal
NPM	0.412	0.996	Normal
ROI	0.860	0.451	Normal
ROE	0.866	0.441	Normal

Homogeneity Test

The homogeneity test determines whether the variances of the financial performance data across the mining sector companies (PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO)) are equal. If the significance level (p-value) is greater than 0.05, the variances are considered homogeneous.

Table 13. Homogeneity test

Financial Performance Variables	Levene's Test	Sig.	Description
Current ratio	5.018	0.018	Not Homogeneous
Quick ratio	0.318	0.812	Homogeneous
Cash ratio	0.127	0.942	Homogeneous
Inventory turnover	6.591	0.007	Not Homogeneous
TAT	3.209	0.062	Homogeneous
DAR	1.566	0.249	Homogeneous
DER	1.885	0.186	Homogeneous
NPM	1.118	0.380	Homogeneous
ROI	3.333	0.056	Homogeneous
ROE	5.448	0.013	Not Homogeneous

The results of the homogeneity test, as shown in Table 13, indicate that most of the financial performance variables (Quick ratio, Cash ratio, TAT, DAR, DER,

NPM, and ROI) have p-values greater than 0.05, suggesting homogeneous variances. However, the Current ratio, Inventory turnover, and ROE variables have p-values less than 0.05, indicating non-homogeneous variances.Based on the normality and homogeneity tests, it can be concluded that all the financial performance variables follow a normal distribution, allowing for the use of the One Way ANOVA test. However, some variables (Current ratio, Inventory turnover, and ROE) have non-homogeneous variances, which should be considered when interpreting the results of the ANOVA test.

Hypothesis Testing

Hypothesis Testing: Liquidity Ratio

1. Testing the Current Ratio

The first hypothesis states (H1a): "There is a difference in financial performance in the *current ratio* between PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO)." This test was carried out using One Way ANOVA.

Formulation of the Hypothesis:

- *H0: $\mu 1 = \mu 2 = \mu 3 = \mu 4$*
  There is no difference in financial performance in the current ratio among the companies.
- *Ha: $\mu 1 \neq \mu 2 \neq \mu 3 \neq \mu 4$*
  There are differences in financial performance in the current ratio among the companies.

Test Criteria:

- If Sig. (p-value) < 0.05 or F count > F table, then H0 is rejected.
- If Sig. (p-value) > 0.05 or F count < F table, then H0 is accepted.

Based on Table 14, the ANOVA test results with a calculated F of 239.082 > F table (3.490) and a Sig. (p-value) of 0.000 < 0.05 indicate that H1a is accepted. This means there is a significant difference in the current ratio financial performance among the companies. The LSD (Least Significant Difference) test shows that PT. Aneka Tambang Tbk (ANTM) has the highest average and is significantly different from PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia

Tbk (INCO), and PT. Adaro Energy Tbk (ADRO), with PT. Adaro Energy Tbk (ADRO) having the lowest average.

Table 14. Test Result using One Way ANOVA

Company	n	Average Curent ratio	F_{count}	F_{Table}	Sig.	Description
ANTM	4	145.5700 [(b,c,d)]	239.082	3.490	0.000	Significant
PTBA	4	2.3725 [(a)]				
INCO	4	11.4700 [(a)]				
ADRO	4	1.9375 [(a)]				

Description: (a= significant difference with ANTM, b=significant with PTBA, c=significant with INCO, d=significant with ADRO).

2. Quick Ratio Variable Test

The hypothesis states: "There is a difference in financial performance in the *quick ratio* among the companies". This test was carried out using One Way ANOVA.

Formulation of the Hypothesis:

- *H0: $\mu 1 = \mu 2 = \mu 3 = \mu 4$*
  There is no difference in financial performance in the quick ratio among the companies.
- *Ha: $\mu 1 \neq \mu 2 \neq \mu 3 \neq \mu 4$*
  There are differences in financial performance in the quick ratio among the companies.

Test Criteria:

- If Sig. (p-value) < 0.05 or F count > F table, then H0 is rejected.
- If Sig. (p-value) > 0.05 or F count < F table, then H0 is accepted.

Based on Table 15, the ANOVA test results with F count of 42.578 > F table (3.490) and a Sig. (p-value) of 0.000 < 0.05 indicate that H1a is accepted. This means there is a significant difference in the quick ratio financial performance among the companies. The LSD test shows that PT. Vale Indonesia Tbk (INCO) has the highest average and is significantly different from PT. Aneka

Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), and PT. Adaro Energy Tbk (ADRO), with PT. Aneka Tambang Tbk (ANTM) having the lowest average.

Table 15. Test results using One Way ANOVA

Company	n	Average *Quick ratio*	F_{Count}	F_{Table}	Sig.	Description
ANTM	4	1.3925 (c)	42.578	3.490	0.000	Signifikan
PTBA	4	1.9950 (c)				
INCO	4	3.6400 (a,b,d)				
ADRO	4	1.9500 (c)				

Description: (a=significant difference with ANTM, b=significant with PTBA, c=significant with INCO, d=significant with ADRO)

3. Testing the Cash Ratio

The hypothesis states: "There is a difference in financial performance in the *cash ratio* among the companies. This test was carried out using One Way ANOVA."

Formulation of the Hypothesis:

- *H0: $\mu 1 = \mu 2 = \mu 3 = \mu 4$*
  There is no difference in financial performance in the cash ratio among the companies.
- *Ha: $\mu 1 \neq \mu 2 \neq \mu 3 \neq \mu 4$*
  There are differences in financial performance in the cash ratio among the companies.

Test Criteria:

- If Sig. (p-value) < 0.05 or F count > F table, then H0 is rejected.
- If Sig. (p-value) > 0.05 or F count < F table, then H0 is accepted.

Based on Table 16, the ANOVA test results with F count of 35.430 > F table (3.490) and a Sig. (p-value) of 0.000 < 0.05 indicate that H1a is accepted. This means there is a significant difference in the financial performance of the cash ratio among the companies. The LSD test shows that PT. Vale Indonesia Tbk (INCO) has the highest average and is significantly different from PT. Aneka

Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), and PT. Adaro Energy Tbk (ADRO), with PT. Aneka Tambang Tbk (ANTM) having the lowest average.

Table 16. Results of the One Way ANOVA test

Company	n	Average Cash Ratio	F Count	F Table	Sig.	Description
ANTM	4	1.1600 (c)	35.430	3.490	0.000	Significant
PTBA	4	1.3150 (c)				
INCO	4	2.8525 (a,b,d)				
ADRO	4	1.6100 (a,c)				

Description: (a=significant difference with ANTM, b=significant with PTBA, c=significant with INCO, d=significant with ADRO)

Hypothesis Testing: Activity Ratio

1. Inventory Turnover Variable Testing

The first hypothesis states (Ha2): "There is a difference in financial performance on *inventory turnover* among the companies. This test was carried out using One Way ANOVA."

Formulation of the Hypothesis:

- *H0: $\mu 1 = \mu 2 = \mu 3 = \mu 4$*
  There is no difference in financial performance on inventory turnover among the companies.
- *Ha: $\mu 1 \neq \mu 2 \neq \mu 3 \neq \mu 4$*
  There are differences in financial performance on inventory turnover among the companies.

Criteria of the tests:

- If Sig. (p-value) < 0.05 or F count > F table, then H0 is rejected.
- If Sig. (p-value) > 0.05 or F count < F table, then H0 is accepted.

Based on Table 17, the ANOVA results show an F count of 17.797, which is greater than the F table value of 3.490, and a Sig. (p-value) of 0.000, which is less than 0.05. Thus, H2a is accepted, indicating significant differences in

financial performance of inventory turnover among the companies. The LSD (Least Significant Difference) test reveals that PT. Adaro Energy Tbk (ADRO) has the highest average and is significantly different from PT. Aneka Tambang Tbk (ANTM), PT. Bukit Asam Tbk (PTBA), and PT. Vale Indonesia Tbk (INCO). PT. Vale Indonesia Tbk (INCO) has the lowest average and is significantly different from PT. Bukit Asam Tbk (PTBA) and PT. Adaro Energy Tbk (ADRO).

Table 17. Test results using One way ANOVA

Company	**n**	**Average *Inventory turnover***	**F $_{Count}$**	**F $_{Table}$**	**Sig.**	**Description**
ANTM	4	12.7850 $^{(d)}$	17.797	3.490	0.000	Significant
PTBA	4	16.9375$^{(c,d)}$				
INCO	4	5.4575$^{(b,d)}$				
ADRO	4	28.8725 $^{(a,b,c)}$				

Description: (a=significant compared to ANTM, b=significant compared to PTBA, c=significant compared to INCO, d=significant compared to ADRO)

2. Testing the Total Assets Turnover (TAT) Variable

The hypothesis, H2a, states that there are differences in financial performance on TAT among the same companies. This test was conducted using One-Way ANOVA.

Formulation of the Hypothesis:

- *H0: $\mu 1 = \mu 2 = \mu 3 = \mu 4$*
  There is no difference in financial performance on TAT among the companies.
- *Ha: $\mu 1 \neq \mu 2 \neq \mu 3 \neq \mu 4$*
  There are differences in financial performance on TAT among the companies.

Test Criteria:

- If Sig. (p-value) < 0.05 or F count > F table, then H0 is rejected.
- If Sig. (p-value) > 0.05 or F count < F table, then H0 is accepted.

Based on Table 18, the ANOVA results with an F count of 11.028, which exceeds the F table value of 3.490, and a Sig. (p-value) of 0.001, which is below 0.05, indicate that H2a is accepted. This means there are significant differences in TAT's financial performance among the companies. The LSD test shows that PT Bukit Asam Tbk (PTBA) has the highest average and is significantly different from PT. Vale Indonesia Tbk (INCO) and PT. Adaro Energy Tbk (ADRO). PT. Vale Indonesia Tbk (INCO) records the lowest average, differing significantly from PT. Aneka Tambang Tbk (ANTM) and PT Bukit Asam Tbk (PTBA).

Table 18. One-Way ANOVA Results

Company	n	TAT Average	F_{count}	F_{table}	Sig.	Description
ANTM	4	0.7800 [(c)]	11.028	3.490	0.001	Significant
PTBA	4	0.8300 [(c,d)]				
INCO	4	0.3300 [(a,b)]				
ADRO	4	0.4700[(b)]				

Description: (a=significant compared to ANTM, b=significant compared to PTBA, c=significant compared to INCO, d=significant compared to ADRO)

Hypothesis Testing: Solvency Ratio

1. Debt to Asset Ratio (DAR) Variable Testing

The hypothesis H3a posits that there is a significant difference in financial performance regarding the Debt to Asset Ratio (DAR) among PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO). This was analyzed using One Way ANOVA.

Formulation of the Hypothesis:

- *H0:* $\mu 1 = \mu 2 = \mu 3 = \mu 4$
  There is no difference in financial performance on DAR among the companies.
- *Ha:* $\mu 1 \neq \mu 2 \neq \mu 3 \neq \mu 4$
  There are differences in financial performance on DAR among the companies.

Test Criteria:

- Reject H0 if Sig. < 0.05 or F count > F table.
- Accept H0 if Sig. > 0.05 or F count < F table.

Table 19. One Way ANOVA on DAR

Company	n	DAR Average	F_{count}	F_{table}	Sig.	Description
ANTM	4	0.3875 [b,c]	87.036	3.490	0.000	Significat
PTBA	4	0.3225 [a,c,d]				
INCO	4	0.1425 [a,b,d]				
ADRO	4	0.4075 [b,c]				

Description: (a=significant with ANTM, b=significant with PTBA, c=significant with INCO, d=significant with ADRO)

The ANOVA results show an F count of 87.036 which is greater than the F table value of 3.490, and a Sig. of 0.000 which is less than 0.05, thereby accepting H3a. This suggests significant differences in DAR among the companies. The LSD test revealed that PT. Adaro Energy Tbk (ADRO) has the highest average DAR significantly different from PT. Bukit Asam Tbk (PTBA) and PT. Vale Indonesia Tbk (INCO), which has the lowest average and is significantly different from all other companies.

2. Debt to Equity Ratio (DER) Variable Testing

The hypothesis H3a states that there are differences in the financial performance regarding the Debt to Equity Ratio (DER) among the same companies. This was tested using One Way ANOVA.

Formulation of the Hypothesis:

- *H0: $\mu 1 = \mu 2 = \mu 3 = \mu 4$*
  There is no difference in financial performance on DER among the companies.
- *Ha: $\mu 1 \neq \mu 2 \neq \mu 3 \neq \mu 4$*
  There are differences in financial performance on DER among the companies.

Test Criteria:

- If probability (Sig-t) < 0.05 or $F_{count} > F_{table}$, then Ho is rejected
- If probability (Sig-t) > 0.05 or $F_{count} < F_{table}$, then Ho is accepted

Table 20. One Way ANOVA on DER

Company	n	DER Average	F_{count}	F_{Table}	Sig.	Description
ANTM	4	0.6625 (b,c)	58.386	3.490	0.000	Significant
PTBA	4	0.4800 (a,c,d)				
INCO	4	0.1650 (a,b,d)				
ADRO	4	0.6850(b,c)				

Description: (a=significant with ANTM, b=significant with PTBA, c=significant with INCO, d=significant with ADRO)

The ANOVA results reveal an F count of 58.386 which is greater than the F table value of 3.490, and a Sig. of 0.000 which is less than 0.05, thus accepting H3a. This indicates significant differences in DER among the companies. The LSD test shows that PT. Adaro Energy Tbk (ADRO) has the highest average and is significantly different from PT. Bukit Asam Tbk (PTBA) and PT. Vale Indonesia Tbk (INCO), which has the lowest average and is significantly different from all other companies.

Hypothesis Testing: Profitability Ratio

1. Net Profit Margin (NPM) Variable Testing

The hypothesis, H4a, states: There are differences in financial performance in NPM between PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO). This test was carried out with One Way ANOVA.

The hypothesis is formulated as follows:

- *H0: $\mu 1 = \mu 2 = \mu 3 = \mu 4$*

There is no difference in the financial performance of NPM between PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO).

- *Ha: $\mu 1 \neq \mu 2 \neq \mu 3 \neq \mu 4$*
  There are differences in the financial performance of NPM between PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO).

The test criteria are as follows:

- If the probability (Sig-t) < 0.05 or F count > F table, then H0 is rejected.
- If the probability (Sig-t) > 0.05 or F count < F table, then H0 is accepted.

Table 21. One Way ANOVA Test on the NPM Variable

Company	n	Average NPM	F_{count}	F_{Table}	Sig.	Description
ANTM	4	0.0225 (b,d)	13,291	3.490	0.000	Significant
PTBA	4	0.2000 (a,c)				
INCO	4	0.0600 (b)				
ADRO	4	0.1200 (a)				

Description: (a=significant with ANTM, b= significant with PTBA, c=significant with INCO, d=significant with ADRO)

Based on Table 21, it can be seen that the ANOVA test results with a calculated F of 13.291 > F table (3.490) and a probability (Sig.) of 0.000 < 0.05. Thus, H4a is accepted, which means there is a significant difference in the financial performance of NPM between PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO).

In the ANOVA test to see the smallest significant difference test, namely the LSD (Least Significant Difference) test, it appears that PT Bukit Asam Tbk (PTBA) has the highest average and is significantly different from PT. Aneka Tambang Tbk (ANTM) and PT Vale Indonesia Tbk (INCO), while PT Aneka Tambang Tbk (ANTM) has the lowest average, and is significantly different from PT Bukit Asam Tbk (PTBA) and PT. Adaro Energy Tbk (ADRO).

2. Test of the Return On Investment (ROI)

The hypothesis, H4a, states: There are differences in financial performance on ROI between PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO). This test was carried out with One Way ANOVA.

The hypothesis is formulated as follows:

- *H0: $\mu 1 = \mu 2 = \mu 3 = \mu 4$*
  There is no difference in financial performance in ROI between PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO).
- *Ha: $\mu 1 \neq \mu 2 \neq \mu 3 \neq \mu 4$*
  There are differences in financial performance on ROI between PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO).

The test criteria are as follows:

- If the probability (Sig-t) < 0.05 or $F_{count} > F_{table}$, then H0 is rejected.
- If the probability (Sig-t) > 0.05 or $F_{count} < F_{table}$, then H0 is accepted.

Table 22. One Way ANOVA Test on the ROI Variable

Company	n	ROI Average	F count	F Table	Sig.	Description
ANTM	4	0.0200 (b)	17.664	3.490	0.000	Significant
PTBA	4	0.1675 (a,c,d)				
INCO	4	0.225 (b)				
ADRO	4	0.575 (b)				

Description: (a=significant with ANTM, b= significant with PTBA, c=significant with INCO, d=significant with ADRO)

Based on Table 22, it can be seen that the ANOVA test results with a calculated F of 17.664 > F table (3.490) and a probability (Sig.) of 0.000 < 0.05. Thus, H4a is accepted, which means there is a significant difference in ROI financial performance between PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO).

In the ANOVA test to see the smallest significant difference test, namely the LSD (Least Significant Difference) test, it appears that PT Adaro Energy Tbk (ADRO) has the highest average and is significantly different from PT Bukit Asam Tbk (PTBA), while PT Aneka Tambang Tbk (ANTM) has the lowest average, and is significantly different from PT Bukit Asam Tbk (PTBA).

3. Return On Equity (ROE) Variable Testing

The hypothesis, H4a, states: There are differences in financial performance on ROE between PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO). This test was carried out with One Way ANOVA.

The hypothesis is formulated as follows:

- *H0: $\mu 1 = \mu 2 = \mu 3 = \mu 4$*
  There is no difference in financial performance on ROE between PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO).
- *Ha: $\mu 1 \neq \mu 2 \neq \mu 3 \neq \mu 4$*
  There are differences in financial performance on ROE between PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO).

The test criteria are as follows:

- If the probability (Sig-t) < 0.05 or F count > F table, then H0 is rejected.
- If the probability (Sig-t) > 0.05 or F count < F table, then H0 is accepted.

Table 23. One Way ANOVA Test on the ROE Variable

Company	n	Average ROE	F_{count}	F_{Table}	Sig.	Description
ANTM	4	0.0300 [(b)]	17.273	3.490	0.000	Significant
PTBA	4	0.2500 [(a,c,d)]				
INCO	4	0.0225 [(b)]				
ADRO	4	0.0975 [(b)]				

Description: (a=significant with ANTM, b= significant with PTBA, c=significant with INCO, d=significant with ADRO)

Based on Table 23, it can be seen that the ANOVA test results with a calculated F of 17.273 > F table (3.490) and a probability (Sig.) of 0.000 < 0.05. Thus, H4a is accepted, which means there is a significant difference in ROE financial performance between PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO).

In the ANOVA test to see the smallest significant difference test, namely the LSD (Least Significant Difference) test, it appears that PT Bukit Asam Tbk (PTBA) has the highest average and is significantly different from PT. Aneka Tambang Tbk (ANTM), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO). Meanwhile, PT Vale Indonesia Tbk (INCO) has the lowest average, and is significantly different from PT Bukit Asam Tbk (PTBA).

Thus, the hypothesis testing shows significant differences in the financial performance metrics (NPM, ROI, and ROE) among the four companies: PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO). These results provide valuable insights for financial analysis and decision-making. Further studies could explore the factors contributing to these differences and their implications for the companies' strategic planning and operations.

Discussions

Liquidity Ratios

Liquidity ratios are critical financial metrics used to assess a company's ability to meet its short-term financial obligations. These ratios play a pivotal role in financial analysis, especially for stakeholders interested in understanding a firm's short-term financial health.

a. Current Ratio

The current ratio is a key liquidity metric that gauges a company's ability to meet its short-term obligations (current liabilities) within one year. The hypothesis testing results indicate that PT. Aneka Tambang Tbk (ANTM) exhibits the highest average current ratio, demonstrating a statistically significant difference from PT Bukit Asam Tbk (PTBA), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO). Conversely, PT. Adaro Energy Tbk (ADRO) displays the lowest average current ratio, significantly distinct from PT. Aneka Tambang Tbk (ANTM).

Further analysis reveals that all four companies possess current ratios falling below the industry standard of 2.0 (Kasmir, 2018). This finding suggests potential concerns regarding their short-term liquidity positions. A current ratio below 1.0 generally indicates difficulty meeting current obligations without converting non-current assets to cash. However, it is essential to consider this finding in the context of the specific industry. While a 2.0 current ratio might be considered a benchmark for some industries, it might not be the most appropriate standard for the mining sector. Further research into industry-specific benchmarks would be necessary for a more definitive assessment.

b. Quick Ratio

The quick ratio, also known as the acid-test ratio, is a metric that assesses a company's ability to meet its short-term obligations (current liabilities) using its most liquid current assets. Unlike the cash ratio, it excludes inventory from the calculation due to its less immediate convertibility to cash. The results reveal that PT. Vale Indonesia Tbk (INCO) achieved the highest average quick ratio, exhibiting a statistically significant difference from PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), and PT. Adaro Energy Tbk (ADRO). Conversely, PT. Aneka Tambang Tbk (ANTM) displayed the lowest average quick ratio, significantly distinct from PT. Vale Indonesia Tbk (INCO).

Further analysis indicates that PT. Vale Indonesia Tbk (INCO), PT. Bukit Asam Tbk (PTBA), and PT. Adaro Energy Tbk (ADRO) possess quick ratios exceeding the industry standard of 1.5 times (Kasmir, 2018). This finding suggests a more favorable short-term liquidity position for these companies compared to PT. Aneka Tambang Tbk (ANTM). Their higher quick ratios imply a greater ability to meet current liabilities using highly liquid assets like marketable securities or accounts receivable, potentially without resorting to selling inventory.

In contrast, PT. Aneka Tambang Tbk (ANTM) demonstrates a quick ratio below the industry benchmark (1.4 times). This finding suggests a potential area for improvement in its short-term liquidity management. While it might not necessarily require immediate inventory liquidation, strategies to enhance its holdings of highly liquid assets could strengthen its capacity to fulfill short-term obligations.

c. Cash Ratio

The cash ratio serves as a critical metric for assessing a company's short-term liquidity. It reflects the company's capacity to meet its current liabilities using its most readily available asset: cash. The hypothesis testing results indicate that PT. Vale Indonesia Tbk (INCO) exhibits the highest average cash ratio, demonstrating a statistically significant difference from PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), and PT. Adaro Energy Tbk (ADRO). Conversely, PT. Aneka Tambang Tbk (ANTM) displays the lowest average cash ratio, significantly distinct from PT. Vale Indonesia Tbk (INCO).

Further examination reveals that all four companies possess cash ratios falling below the industry standard of 50% (Kasmir, 2018). This finding suggests potential concerns regarding their short-term liquidity position. A low cash ratio might imply a challenge in fulfilling short-term obligations without converting other current assets into cash.

These liquidity ratios, essential tools in financial analysis, underscore the importance of maintaining adequate liquid resources to ensure operational stability and financial flexibility. The companies studied should consider strategic financial management practices to enhance their liquidity positions, thereby safeguarding against potential short-term financial challenges.

Activity Ratios

Activity ratios are financial metrics used to evaluate a company's effectiveness in utilizing its assets.

a. Inventory Turnover

Inventory turnover is a crucial activity ratio that measures the efficiency with which a company manages its inventory. It reflects the number of times a company sells and replaces its inventory within a given period. The hypothesis testing results reveal that PT. Adaro Energy Tbk (ADRO) achieved the highest average inventory turnover, exhibiting a statistically significant difference from PT. Aneka Tambang Tbk (ANTM), PT Bukit Asam Tbk (PTBA), and PT. Vale Indonesia Tbk (INCO). Conversely, PT. Vale Indonesia Tbk (INCO) demonstrated the lowest average inventory

turnover, significantly distinct from PT Bukit Asam Tbk (PTBA) and PT. Adaro Energy Tbk (ADRO).

Further analysis indicates that only PT. Adaro Energy Tbk (ADRO) achieved an inventory turnover exceeding the industry standard of 20 times (Kasmir, 2018). This superior performance suggests that ADRO effectively manages its inventory levels, avoiding excessive inventory holding (unproductive inventory) that can lead to inefficiencies and increased holding costs.

In contrast, the remaining companies (PTBA, ANTM, and INCO) displayed inventory turnover ratios below the industry benchmark. This finding suggests potential inefficiencies in their inventory management practices. Holding excessive inventory can negatively impact a company's financial performance due to factors such as storage costs, obsolescence risk, and reduced liquidity. Therefore, it is recommended that PTBA, ANTM, and INCO implement strategies to improve their inventory turnover. These strategies could encompass initiatives aimed at optimizing inventory control systems, reducing lead times, and enhancing forecasting accuracy.

b. Total Asset Turnover (TAT)

Total asset turnover (TAT) is a metric that assesses a company's efficiency in utilizing its assets to generate sales. It essentially measures the amount of revenue generated per unit of total assets. The results reveal that PT Bukit Asam Tbk (PTBA) achieved the highest average TAT, exhibiting a statistically significant difference from PT. Vale Indonesia Tbk (INCO) and PT. Adaro Energy Tbk (ADRO). Conversely, PT. Vale Indonesia Tbk (INCO) demonstrated the lowest average TAT, significantly distinct from PT Aneka Tambang Tbk (ANTM) and PT Bukit Asam Tbk (PTBA).

While all four companies achieved positive TAT ratios, further examination is necessary to understand the reasons behind the observed differences. PTBA's superior TAT performance suggests its ability to generate a higher level of sales per rupiah of assets compared to the other companies, exceeding the industry average TAT of 2 times (Kasmir, 2018). This could be attributed to factors such as efficient asset allocation, strong sales performance, or a combination of both.

Profitability Ratios

Profitability ratios gauge a company's ability to generate profits from its revenue, assets, and equity. These ratios provide valuable insights into a company's financial performance.

a. Net Profit Margin (NPM)

The net profit margin is a key profitability metric that measures the percentage of each sales unit converted into net profit. The results reveal that PT Bukit Asam Tbk (PTBA) achieved the highest average NPM, exhibiting a statistically significant difference from PT. Aneka Tambang Tbk (ANTM) and PT. Vale Indonesia Tbk (INCO). Conversely, PT. Aneka Tambang Tbk (ANTM) demonstrated the lowest average NPM, significantly distinct from PT Bukit Asam Tbk (PTBA) and PT. Adaro Energy Tbk (ADRO).

Further examination indicates that only PT Bukit Asam Tbk (PTBA) achieved an NPM exceeding the industry standard of 20% (Kasmir, 2018). The remaining companies (PT. Adaro Energy Tbk (ADRO), PT. Vale Indonesia Tbk (INCO), and PT. Aneka Tambang Tbk (ANTM)) displayed NPM ratios below the benchmark, suggesting potential areas for improvement in their profitability performance. These findings could be attributed to two primary factors: pricing strategies and production cost management. Companies with lower NPMs might be selling goods at relatively low prices or incurring high production costs. Implementing strategies to optimize pricing and control production expenses could lead to a more favorable net profit margin.

b. Return on Investment (ROI)

ROI is a measurement of the return generated on a company's total assets. The findings indicate that PT. Adaro Energy Tbk (ADRO) exhibits the highest average ROI, demonstrating a statistically significant difference from PT. Vale Indonesia Tbk (INCO) and PT Bukit Asam Tbk (PTBA). In contrast, PT. Aneka Tambang Tbk (ANTM) displays the lowest average ROI, significantly distinct from PT Bukit Asam Tbk (PTBA).

Further analysis reveals that PT. Adaro Energy Tbk (ADRO) achieved a return on investment of 58%, exceeding the industry standard of 30%

established by Kasmir (2018). This superior ROI suggests that ADRO effectively utilizes its assets to generate profits, potentially due to high asset turnover. Conversely, the remaining companies (PT. Vale Indonesia Tbk (INCO), PT Bukit Asam Tbk (PTBA), and PT. Aneka Tambang Tbk (ANTM)) demonstrate ROIs below the industry benchmark. These findings imply that PT. Vale Indonesia Tbk (INCO), PT Bukit Asam Tbk (PTBA), and PT. Aneka Tambang Tbk (ANTM) might benefit from implementing strategies to improve their asset utilization efficiency. Kasmir (2016) suggests that effective management capabilities are crucial in optimizing investment returns.

c. Return on Equity (ROE)

Return on equity (ROE) measures the percentage return earned on shareholders' equity. The statistical tests revealed significant differences in the average ROE among the four companies. PT Bukit Asam Tbk (PTBA) achieved the highest average ROE, which was statistically distinct from the ROE of PT. Aneka Tambang Tbk (ANTM), PT. Vale Indonesia Tbk (INCO), and PT. Adaro Energy Tbk (ADRO). Conversely, PT Vale Indonesia Tbk (INCO) exhibited the lowest average ROE, significantly different from PT Bukit Asam Tbk (PTBA).

These findings suggest that the companies demonstrated varying degrees of effectiveness in utilizing shareholders' equity. Further examination of the statistical test outcomes indicates that all four companies obtained average ROE ratios below the industry standard of 40% (Kasmir, 2016). This finding suggests a potential inefficiency in these companies' utilization of shareholder equity. A low ROE ratio is generally interpreted as a negative indicator of a company's financial performance. Conversely, a high ROE signifies superior efficiency in generating returns on shareholder capital. Therefore, it is recommended that these companies implement strategies to improve their ROE. Such strategies could encompass initiatives aimed at increasing net income or optimizing their capital structure.

CONCLUSION

This study examined the financial performance of four mining companies listed on the Indonesia Stock Exchange (JII) from 2017 to 2020. Ten financial ratios were used to assess liquidity, solvency, profitability, and efficiency. The analysis revealed interesting insights. PT. Vale Indonesia (INCO) had the

strongest short-term liquidity based on quick and cash ratios, but all companies fell below industry averages, suggesting potential challenges meeting current obligations. Regarding solvency, PT. Adaro Energy (ADRO) had the highest debt ratios, indicating a greater reliance on debt financing. PTBA and INCO maintained lower debt ratios, but further analysis is needed for a definitive solvency assessment.

Profitability varied among the companies. PT. Bukit Asam (PTBA) achieved the highest net profit margin (NPM) and return on equity (ROE), exceeding industry benchmarks. Conversely, PT. Aneka Tambang (ANTM) displayed the lowest NPM, highlighting a need for improvement. Finally, in terms of efficiency, PT. Adaro Energy (ADRO) demonstrated the most efficient inventory turnover, exceeding the industry standard. However, the other companies exhibited lower inventory turnover ratios. PTBA achieved the highest total asset turnover (TAT), but further investigation is needed to understand the reasons behind this difference.

This study emphasizes the importance of analyzing multiple financial ratios for a complete picture of a company's financial health. The findings suggest areas for improvement in the financial management practices of the studied companies. Future research could explore the specific strategies employed by PTBA and ADRO to achieve superior performance and utilize industry-specific benchmarks for a more accurate assessment. Additionally, a broader timeframe and a larger sample size could provide more generalizable results. Finally, incorporating internal company data or management interviews could offer a deeper understanding of their financial management practices. By addressing these limitations and pursuing further research avenues, a more comprehensive understanding of the financial health and performance of mining companies in Indonesia can be achieved.

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