ISSN: 2599-1086 | e-ISSN: 2656-1778 | Vol. 7 | No. 1

Financial and Efficiency Performance before and after Mergers and Acquisitions in the Indonesian Infrastructure Industry

Chandra Setiawan[1], Perina Amelia[2]

[1] Faculty of Business, President University, Cikarang Utara, Indonesia
[2] Master of Technology Management, President University, Cikarang Utara, Indonesia

Corresponding author:
Chandra Setiawan | chandra@president.ac.id

ABSTRACT

This study examines the differences in the financial and efficiency performance of several companies before and after Mergers and Acquisitions (M&A). It specifically evaluates the impacts of M&A on infrastructure industry companies listed on the Indonesia Stock Exchange by comparing their performance three years before and three years after M&A. The analysis employs non-parametric statistics, including the Wilcoxon Signed Rank Test, and Data Envelopment Analysis (DEA). The companies' financial performance is assessed using various financial ratios: Current Ratio (CR), Debt to Equity Ratio (DER), Cash Ratio (CR), Interest Coverage Ratio (ICR), Fixed Asset Turnover (FAT), Total Asset Turnover (TATO), Return on Asset (ROA), Return on Equity (ROE), and Net Profit Margin (NPM). The data used is secondary data obtained from the Indonesia Competition Commission (ICC/KPPU), the IDX database, and the financial reports of the companies involved. The findings reveal that, overall, the financial and efficiency performance of the five companies did not improve after the M&A. Surprisingly, only one company, i.e., Adhi Karya, successfully increased its efficiency score following the M&A.

Keywords: DEA analysis; Financial ratio; Infrastructure; M&A

ABSTRAK

Penelitian ini mengkaji perbedaan kinerja keuangan dan efisiensi beberapa perusahaan sebelum dan sesudah Merger dan Akuisisi (M&A). Penelitian ini membandingkan pengaruh M&A terhadap perusahaan industri infrastruktur yang terdaftar di Bursa Efek Indonesia dalam tiga tahun sebelum dan sesudah M&A. Analisis melibatkan metode statistik nonparametric, di antaranya Wilcoxon Signed Rank Test dan Data Envelopment Analysis (DEA). Performa finansial perusahaan dinilai berdasarkan beberapa rasio keuangan, yaitu *Current Ratio* (CR), *Debt to Equity Ratio* (DER), *Cash Ratio* (CR), *Interest Coverage Ratio* (ICR), *Fixed Asset Turnover* (FAT), *Total Asset Turnover* (TATO), *Return on Asset* (ROA), *Return on Equity* (ROE), dan *Net Profit Margin* (NPM). Peneliti juga menggunakan data sekunder yang diperoleh dari KPPU, *database* BEI, dan laporan keuangan masing-masing perusahaan. Hasil penelitian menunjukkan bahwa secara keseluruhan kelima perusahaan tidak menunjukkan peningkatan performa setelah M&A. Menariknya, hanya satu perusahaan, yaitu Adhi Karya, yang berhasil meningkatkan skor efisiensinya pasca M&A.

Kata Kunci: Analisis DEA; Infrastruktur; M&A; Rasio keuangan

ARTICLE HISTORY

Received: May 1, 2024
Revised: June 14, 2024
Published: June 30, 2024

CITATION (APA 7TH)

Setiawan, C., & Amelia, P. (2024). Financial and Efficiency Performance Before and After Mergers and Acquisitions in the Indonesian. *Journal of Infrastructure Policy and Management, 7*(1), 43–62.

INTRODUCTION

Companies expect that mergers will result in better financial and efficiency performance. Although the annual trend in Indonesia is unlikely similar, corporate actions that carry out Mergers and Acquisitions (M&A) tend to increase in the last ten years. According to the Indonesia Competition Commission (ICC/KPPU) from 2010 to June 2020, as shown in Figure 1, M&A trends in Indonesia reached 633 notification reports from business actors (Setiawan et al., 2021). The data also shows that more than 100 companies conducted M&A, as reported by ICC (Setiawan et al., 2021). This indicates that more companies are practicing M&A but do not notify the Indonesia Competition Commission (KPPU) because the value does not meet the provisions stipulated in Law No. 5 of 1999.

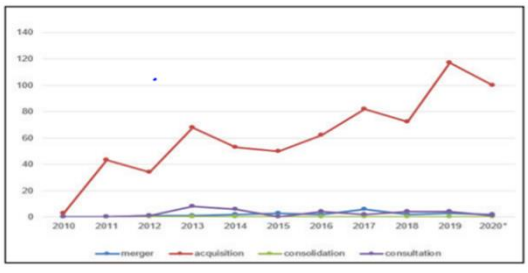

Figure 1. Merger notification (2010 to June 2020)

There are several definitions of M&A. Even though the phrases "merger" and "acquisition" have different meanings, both are frequently used interchangeably (Chiplin & Wright, 1987) to notify an acquisition that occurs when an acquirer purchases the majority of the shares (more than 50%) of another company (the "target") or parts thereof. A merger results in a new company in which the merging parties have about equal control. Acquirers frequently use the term "merger" to calm employee fears and portray a message of friendly cooperation. In terms of transaction volumes, most M&A transactions are acquisitions; nonetheless, mega-merger collaborations attract media attention due to the transaction size (Junni & Teerikangas, 2019).

Another explanation is that a merger is uniting two or more companies into one, to form a new company with a new name. The acquisition is a takeover of a company by another company so that the company has control over the target company. The acquisition strategy is increasingly popular because of the relatively extreme business competition. The underlying reason behind M&A action is the belief that it is a fast-response method to materialize the company's goals by not starting a business from scratch. At the same time, this strategy is also envisaged to improve the company's financial performance (Hariyani et al., 2011). The researchers used the infrastructure industry as the unit of analysis for this study, which aimed to examine the impact of the merger and acquisition activities from 2014 to 2019.

President Joko Widodo (2017) argued that the government wanted to create higher economic growth, both in the medium and long term, while the infrastructure was still far from ideal conditions and even tended to deteriorate. The President cited a 2013 World Bank and Bloomberg McKinsey report, which showed that Indonesia's infrastructure stocks were low, accounting for only 38% of GDP, compared to other countries' average of 70%. Furthermore, compared to the pre-Asian economic crisis of 1997-98, Indonesia's entire infrastructure stocks fell from 49% of GDP in 1995 to 38% in 2012.

The researchers are interested in scrutinizing more about infrastructure companies in Indonesia. Among the many companies in Indonesia engaged in the infrastructure industry, the researchers are interested in studying PT Jasa Marga Tbk (JSMR), PT Wijaya Karya Beton Tbk (WTON), PT Waskita Karya Tbk (WSKT), PT Nusantara Infrastructure Tbk (META), and PT Adhi Karya Tbk (ADHI). Meanwhile, as many as four out of the five companies made acquisitions, only one company, i.e., ADHI, conducted a merger.

On 15 January 2014, PT Nusantara Infrastructure Tbk, through its subsidiary PT Telecom Infranusantara (TI), acquired 70,17% shares of PT Tara Cell Intrabuana, which then changed its name to PT Komet Infranusantara (KIN). Such an acquisition aims to support the growth in the telecommunications tower segment (PT Nusantara Infrastructure Tbk, 2014). On 5 December 2014, PT Wijaya Karya Beton Tbk acquired 99,5% shares of PT Citra Lautan Teduh, a company in the pile manufacturing business. The acquisition was carried out to improve production capacities through consolidation and market expansion (PT Wijaya Karya Beton Tbk, 2014).

In 2015, PT Jasa Marga acquired by buying 59,99% and 55,00% shares from PT Solo Ngawi Jaya and PT Ngawi Kertosono Jaya, respectively. The acquisition activity is an effort of PT Jasa Marga to maintain its position as the leader in the Indonesian toll road industry (PT Jasa Marga Tbk, 2015). Still in the same year, the next company, PT Adhi Karya Tbk, merged two subsidiaries, i.e., PT Adhi Persada Properti and Adhi Persada Realti. The merger, which was inaugurated on 18 June 2015, is because the company wished to encourage the subsidiary to carry out an Initial Public Offering (IPO) so that this target company provides an opportunity to receive an injection of funds for its business expansion (PT Adhi Karya Tbk, 2015).

Lastly, PT Waskita Karya Tbk acquired PT Pemalang Batang Toll Road on 15 February 2016 by taking over 60% of the shares. On 29 May 2017, the company made another acquisition by taking over 55% of the shares of the Cibitung-Cilincing toll road from PT MTD CTP Expressway. The acquisition activities are expected to trigger an increase in the accessibility and capacity of the road network in serving the traffic in the Trans Java corridor (PT Waskita Karya Tbk, 2017).

Financial performance analysis is vital for an enterprise's achievement. A financial ratio is an exceptional ratio that examines the company's business performance (Daryanto et al., 2020). This study compares the efficiency and financial performance of the five companies in the three years before and after M&A and compares the company's performance to industry average financial ratios. The Wilcoxon Signed Rank Test calculates the mean statistical difference between the financial performance before and after M&A.

The topic of financial and efficiency performance before and after M&A in Indonesia's infrastructure industry is of significance for some reasons. First, the infrastructure sector is an important driver of economic growth, supporting commerce, investment, and general development. Besides, Indonesia, with its wide archipelagic topography and rising economy, has a strong demand for efficient and resilient infrastructure. M&A in this sector may result in significant improvements in operational efficiency, financial performance, and service delivery. This study focuses on the effectiveness of M&A strategies in improving the competitiveness and sustainability of infrastructure corporations by assessing the financial and efficiency results of such actions.

The existing literature lacks of concentrated research on the impact of M&A particularly in the Indonesian infrastructure sector context. While there is a large body of research on M&A in general, as well as some studies on infrastructure development, there is little empirical evidence comparing the financial and operational performance of Indonesian infrastructure corporations before and after M&A. This study seeks to fill in this gap by conducting a thorough investigation of how M&A operations affect important performance parameters such as profitability, efficiency, and financial stability in this vital industry.

This study contributes to the area by providing a detailed knowledge of the implications of M&A for infrastructure companies, which can be used to drive future business plans and investments. The findings of the present study are essential to inform industry practices by highlighting best practices for successful integration and identifying characteristics that influence post-merger performance.

This research can also have an impact on policy making by presenting evidence-based suggestions for regulatory frameworks that promote effective M&A, thereby building a more competitive and resilient infrastructure sector in Indonesia. Finally, this study enhances academic understanding and amplifies practical consequences for improving the efficiency and financial health of infrastructure corporations, which is essential for Indonesia's economic development.

THEORETICAL FRAMEWORK

Types and Motives of M&A

A merger combines two or more companies to form a new company (Whitaker, 2012). Usually, a dominant company absorbs one or more companies. There are three types of mergers: horizontal, vertical, and conglomerate (Ahmed & Ahmed, 2014; Gordon, 2024; Yadong et al., 2019). Meanwhile, an acquisition is a single or multiple transaction in which a firm purchases the assets or shares of another company to gain control of it. Several types of acquisitions are friendly, reverse, and hostile (Ganti, 2024).

Mergers and acquisitions (M&A) are often strategies that a company chooses to achieve its goals. Therefore, M&A can also be differentiated based on motives. In general, there are two motives for conducting M&A, i.e. shareholder gains and managerial gains (Taringan et al., 2018).

M&A aims to increase not only the company values but also the actual or future profits. This goal, which is essentially related to shareholder gain, is further discussed in the following eight merger motives:

1. Growth

   The most common motive for M&A is growth. Growth here can be interpreted broadly, such as revenue growth, profit margin growth, and other growth. The company's desire to grow is the most basic motive for practicing M&A. In fact, apart from growing via M&A, companies have some other alternatives, such as through internal or organic growth, where the company can grow internally without M&A with other companies. However, the tendency of this choice is usually slower compared to M&A.

2. Operational synergy

   Synergy comes from the Latin word *"synergos"*, which means to work together. In the context of M&A activities, synergy means extra results obtained when two or more companies carry out a business combination. Synergies are created from a combination of the simultaneous activities of two or more company forces that give greater results or effects rather than these companies working separately or independently.

   When it comes to economies of scale, a corporation is said to achieve this scale if its average cost falls as total output rises. In other words, economies of scale arise when increased production reduces marginal costs. From the economic scope and perspective, it is the economies of scale that apply to multi-product organizations or companies that are connected to a supply chain. The economy of scope can be realized if the average cost of producing two things individually decreases when they are produced jointly (Motta, 2004, as cited in Tarigan, 2016).

3. Financial synergy

   Financial synergy does not result in true cost savings particularly in production costs (Roller, Stennek, & Verboven (2006). Financial synergy can be obtained by saving on interest rates (cost of capital), often unable to borrow at competitive interest rates from relatively small companies.

   These companies often have lower loan withdrawal limits. This is due to the restrictions of regulations from banks in providing credit. The limits in question can occur due to a lack of liquidity, solvency, total assets, and the company's public reputation.

4. Diversification

   Diversification is a strategic motive aimed at reducing the risk of bankruptcy by engaging in business activities across various sectors. This approach allows a company to better withstand sector-specific downturns by spreading risk. Diversification is essential for maintaining competitiveness and supporting business sustainability. It is a key motive for M&A, aligning with portfolio theory commonly used in finance and investment. Portfolio theory suggests that spreading investments across different sectors minimizes risk and enhances returns.

   Through diversification, companies can secure more stable performance. Companies can mitigate the impact of sector-specific challenges while achieving improved financial outcomes. This kind of strategic diversification supports the companies' long-term growth and resilience in an unpredictable economic environment.

5. Horizontal integration

   The purpose of a merger in this context is to shift markets from perfect competition towards a monopoly. However, almost every country has an agency to maintain fair trade competition by ensuring that no private company has a monopoly market. In Indonesia, this agency is known as the Indonesia Competition Commission (KPPU).

   Horizontal integration motive occurs in M&A activities of companies in the same sector. By operating in the same sector, the company resulting from the merger is likely to have a higher market share than that of working separately. The advantage of a horizontal merger goes beyond solely market share, extending to other benefits.

6. Vertical integration

   Vertical integration usually involves the acquisition of companies playing a role in the upstream (backward) or downstream (forward) side. The upstream side (backward vertical integration) is buying companies that are a source of supplies or that act as suppliers. By carrying out vertical integration, companies that carry out M&A are free from dependence on other parties, enabling both just-in-time inventory management (which is essential for increasing the company's efficiency) and internal transfer pricing (which is very dependent on supplier performance). Just in-time can only succeed when suppliers are reliable.

   Vertical integration is useful in enabling the successful implementation of just-in-time inventory management. In addition, internal transfer pricing is more profitable for the company because it allows the company to get cheaper acquisition prices and lower taxes.

7. Improved management

   If the companies that carry out M&A has technological capabilities, human resources, organizational culture, patents, and know-how, then they are complementary to each other. By joining forces, the companies can achieve technological progress. Product or process innovation can be used to represent technological development. As with know-how, Research and Development (R&D) is one of the most crucial divisions in the company. When properly merged, it can result in technical growth and a rise in joint outputs.

   According to Roller, Stennek, and Verboven (2006), acquiring a target company with good R&D is far much quicker way than developing a company itself internally. Indeed, merger companies have acknowledged that those integrating their R&D appropriately will be able to develop faster in introducing new products and products of better quality, and are useful in the process of reducing prices.

8. Tax motives

   The tax motive is one of the motives on which M&A activities are based. When a company has more cash and there is no economically viable internal investment opportunity, the company can carry out M&A activities. In other words, buying another company can be the "best" way to avoid taxes.

   M&A before the 1980s were very motivated by tax advantages. The reason is that the purchased assets can be profitable because they provide a greater depreciation cost so as to reduce the tax liability that arises.

Besides its potential to achieve synergy and benefiting the acquiring firm's shareholders (Rohra & Chawla, 2015), M&A is also carried out to achieve managerial costs. M&A is sometimes aimed at benefitting the company manager (managerial gains) and is not always for the company's benefit. In other words, the purpose of M&A is solely for the benefit of company management, not the owners.

Financial Ratios

A financial report is a tool frequently used by businesses to communicate the situation and financial condition of a company to both internal and external stakeholders (Serly & Eddy, 2020). A financial ratio is an index that connects two accounting numbers and divides one number by another. Financial ratios play an important role in revealing the financial health of a company. They help maintain the competitive position of an enterprise and contribute to stable development, thereby eliminating potential financial risks (Kliestik, 2020). The tool often used during these checks is a financial ratio or index that links two pieces of financial data by dividing one number by the other. Types of financial ratios are as follows:

1. Liquidity Ratio

   By comparing short-term liabilities with short-term resources—also known as current resources—that are available to cover these obligations, the liquidity ratio assesses the company's capacity to meet short-term obligations. The liquidity ratio consists of:

   a. Current Ratio

   The current ratio shows a company's ability to pay its short-term liabilities using its current assets.

$$Current\ Ratio = \frac{Current\ assets}{Current\ liabilities}$$

   b. Acid-Test Ratio (Quick Ratio)

   The ratio indicates the company's ability to meet and pay its liabilities or current debt (short-term debt) with current assets, without regard for inventory value. The formula for calculating a quick ratio is:

$$Quick\ Ratio = \frac{Current\ assets - Inventory}{Current\ liabilities}$$

   c. Cash Ratio

   The quick ratio, which measures how much cash is available to settle short-term debt or current liabilities, is refined into the cash ratio. This ratio is typically used by potential creditors to measure a company's liquidity and ease of paying off short-term debt.

$$Cash\ Ratio = \frac{Cash\ Equivalents + Cash}{Current\ liabilities}$$

2. Efficiency Ratio

   The efficiency ratio is the ratio that measures the effectiveness of a company in managing its assets, i.e., measuring the ability of all its assets to generate sales. This ratio consists of:

   a. Fixed Asset Turnover Ratio

   The fixed asset turnover ratio measures the efficacy of a company in using its plants and equipment. The formula is:

$$Fixed\ Asset\ Turnover = \frac{Revenue}{Fixed\ Asset}$$

   b. Inventory Turnover

   This ratio shows the frequency of the item "rolls" in a year. The formula is:

$$Inventory\ Turnover = \frac{COGS}{Inventory}$$

c. Total Asset Turnover

This ratio is used to measure the turnover of all company assets. The formula for calculating the total asset turnover is:

$$Total\ Asset\ Turnover = \frac{Net\ Sales}{Total\ Asset}$$

3. Leverage Ratio

A leverage ratio is a ratio that shows the extent to which the company is paid by debt. This ratio shows the proportion of debt used to finance investment. Companies that do not have leverage use 100% of their capital. The leverage ratio is divided into:

a. Debt Ratio

A debt ratio is a financial ratio showing the asset percentage provided through debt. The debt ratio can be defined as the ratio of total debt to total assets. The formula for calculating the debt ratio is:

$$Debt\ Ratio = \frac{Total\ Liabilities}{Total\ Asset}$$

b. Debt to Equity Ratio (DER)

This ratio is used to calculate the ratio of debt to total equity. Total debt includes all current liabilities and long-term debt. The formula:

$$Debt\ to\ Equity\ Ratio\ (DER) = \frac{Total\ Liabilities}{Total\ Equity}$$

c. Interest Coverage Ratio

It is the ratio of debt and profitability used to determine how easily a company can pay its loan interest. The interest payment multiple ratios measure the extent to which operating profit can decrease before the company cannot meet its annual interest expense. The formula for calculating the interest coverage ratio is:

$$Interest\ Coverage\ Ratio\ (ICR) = \frac{EBIT}{Interest\ Expense}$$

4. Profitability Ratio

The profitability ratio illustrates how debt, asset management, and liquidity affect operating performance. This ratio consists of:

a. Gross Profit Margin

Gross Profit Margin (GPM) compares gross profit to previous sales or income. GPM is an analysis that measures a company's financial health by assessing the amount of money left over after deducting the Cost of Goods Sold (COGS). The formula for calculating gross profit margin is:

$$Gross\ Profit\ Margin = \frac{Gross\ Profit}{Net\ Sales} \times 100$$

b. Net Profit Margin

This ratio shows how much operating profit can be made from each currency (IDR or the US) sales. The formula for calculating the profit margin on sales is:

$$Net\ Profit\ Margin = \frac{Net\ Income}{Net\ Sales} \times 100$$

c. Operating Profit Margin

Operating Profit Margin (OPM) is a performance ratio that reflects the percentage of profit a company produces from its operations. The formula for calculating the operating profit margin is:

$$Operating\ Profit\ Margin = \frac{Operating\ Profit}{Net\ Sales} \times 100$$

d. Return on Asset (ROA)

This ratio shows the company's assets and ability to profit from the company's operations. Operational assets are used to measure the ability to earn a profit.

$$ROA = \frac{Net\ Income}{Total\ Asset} \times 100$$

e. Return on Equity (ROE)

The ratio of net income to common stock equity generally measures the return on equity of common stock (ROE) or the rate of return on investment of shareholders. The formula is:

$$ROE = \frac{Net\ Income}{Total\ Equity} \times 100$$

Variables for DEA Analysis

The non-parametric technique known as DEA was first introduced by Charnes et al. (1978), later referred to as Charnes, Cooper, and Rhode (CCR). In 1984, Banker, Charnes, and Cooper (BCC) expanded on this concept. Decision-Making Unit (DMU) efficiency is determined by DEA. The model's inputs and outputs determine the meaning and goal of the analysis. Inputs and outputs should be logically linked, as this is a production process (Krejnus et al., 2023). The ratio is derived from weighted outputs to weighted inputs. The variables are as follows:

1. Fixed Assets (Input Variable 1)—It is comparable to the physical capital that every business needs. This study employs the same variable as earlier research (Jayaraman & Srinivasan, 2014; Chaudhary & Arshad, 2016).

2. Salary Expense (Input Variable 2)—Employee factor is strongly related to the production process. This analysis uses the variable of previous studies (Jayaraman & Srinivasan, 2014; Chaudhary & Arshad, 2016).

3. Revenue (Output Variable 1)— Because the study employs an income-based model, the revenue accurately represents corporate income. Therefore, the variable is also used in accordance with the past studies (Chaudhary & Arshad, 2016; Jayaraman & Srinivasan, 2014).

METHODOLOGY

Research Design

This section explains more about the research framework, along with the hypothesis of all variables. The sections below describe the research instrument, the sample, and the data analysis method.

This study uses non-parametric statistical models such as:

1. Descriptive statistics use frequency, mean, minimum, maximum, and standard deviation to provide data (Sekaran & Bougie, 2016).

2. The paired sample t-test compares two sets of observations from the same person, entity, or unit at separate periods to determine if the mean difference is significantly greater than zero. The Wilcoxon Signed Rank Test is a prominent method for paired sample T-testing. It is a non-parametric statistical method that does not assume that the data is normally distributed or that a minimum sample size is required.

3. Chaudhary et al. (2016) use the income-based model to assess the impact of M&A on firm efficiency. This model considers expenses as inputs and income as outputs. This research employs methods from DEA Online Software.

Research Framework

The research framework for this analysis is shown in Figure 2.

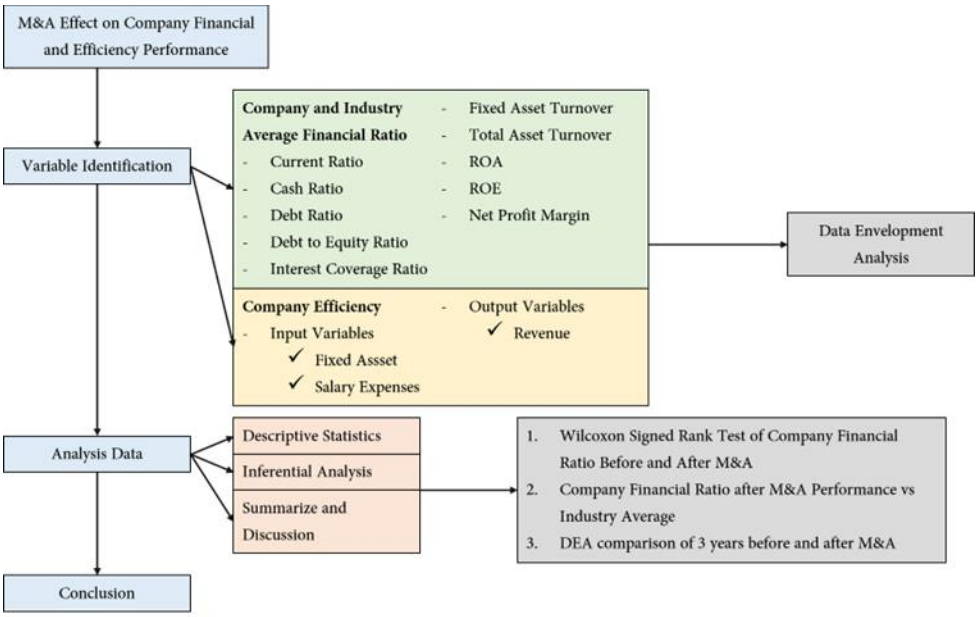

Figure 2. Research framework

Hypotheses

Based on the research framework, the hypotheses for this study are as follows:

1. H_{01}: There is no significant difference in company financial ratios before and after M&A (Current Ratio, Cash Ratio, Debt Ratio, Debt to Equity Ratio, Interest Coverage Ratio, Fixed Asset Turnover, ROA, ROE, Net Profit Margin).

   If the value > 0,05, H_{01} is accepted.

   H_{a1}: There is a significant difference in company financial ratios before and after M&A (Current Ratio, Cash Ratio, Debt Ratio, Debt to Equity Ratio, Interest Coverage Ratio, Fixed Asset Turnover, ROA, ROE, Net Profit Margin).

   If the value < 0,05, H_{01} is rejected.

2. H_{02}: The company's financial ratios do not surpass the industry average (Current Ratio, Cash Ratio, Debt Ratio, Debt to Equity Ratio, Interest Coverage Ratio, Fixed Asset Turnover, ROA, ROE, Net Profit Margin).

   H_{a2}: The company's financial ratios surpass the industry average (Current Ratio, Cash Ratio, Debt Ratio, Debt to Equity Ratio, Interest Coverage Ratio, Fixed Asset Turnover, ROA, ROE, Net Profit Margin).

3. H_{03}: After M&A, the company's performance (DEA) does not improve in efficiency compared to before M&A.

   H_{a3}: After M&A, the company's performance (DEA) improves in efficiency compared to before M&A.

Data Source

This study applies non-probability sampling, which is homogeneous sampling. According to Etikan et al. (2017), homogenous sampling focuses on a sample with the same features. The five firms being studied satisfy the following criteria:

1. Infrastructure companies listed on the Indonesia Stock Exchange that experienced M&A activities from 2014 to 2019.

2. The samples should be non-financial firms. Because the financial sector has various ratios and analyses, it would be impractical to combine the financial and non-financial companies in the research.

3. The company's financial data are valid for three years before and after M&A.

4. Throughout the study time, the acquired firm must be registered on the Indonesia Stock Exchange, be listed there, and not be a foreign company.

5. The types of M&A are horizontal and vertical to ensure that the company's output after M&A can be correlated with the industry average. Because conglomerates are likely to operate in more than one industry context, it will be difficult to access the comparison.

6. The sample company is a company that has informed its M&A operations in both KPPU and IDX.

FINDINGS

PT Jasa Marga Tbk (JSMR)

PT Jasa Marga Tbk, formed on March 1, 1978, is Indonesia's largest toll road operator, known for its significant network and innovative services. Founded as a state-owned enterprise, the corporation went public in 1987, trading on the Indonesia Stock Exchange under the ticker symbol "JSMR". JSMR has led various major infrastructure projects, including the Jakarta Outer Ring Road in 1995 and the Trans-Java Toll Road in 2017. The corporation has evolved from a minor state operation to a major player in Indonesia's toll road industry, handling over 1.200 kilometers of toll roads, accounting for around 60% of the country's total toll road network. JSMR's strategic government support, technological improvements, and skill in large-scale projects provide it a strong market position and competitive advantage.

JSMR is financially strong, with revenues of IDR11,5 trillion and a net profit margin of approximately 18% for fiscal year 2023. The company's assets were valued at IDR60 trillion by the end of 2023, showing its consistent expansion and ongoing infrastructure investment. In recent years, the corporation has made considerable investments in digital infrastructure, aiming to improve efficiency and customer experience via electronic toll systems. Despite a balanced debt-to-equity ratio of 1.5, JSMR has an excellent financial performance, with a 7% compound annual revenue growth rate over the last five years. The corporation is still expanding its toll road network, with a focus on crucial regions that drive economic growth. With its extensive network, strategic support, and innovative approach, JSMR is a cornerstone of Indonesian infrastructure development, prepared to maintain its sector leadership.

PT Wijaya Karya Beton Tbk (WTON)

WTON, a subsidiary of PT Wijaya Karya Tbk (Persero), was founded in 1997 and has since become a key participant in Indonesia's precast concrete sector. Initially, the company focused on making precast concrete components for its parent company's construction projects. As time goes by, WTON extended its business, becoming a vital supplier for a variety of infrastructure projects throughout Indonesia. An important milestone was its first public offering in 2014, which reinforced its capital foundation and allowed for continued expansion. WTON's transition from a

supporting role in its parent firm to an independent industry leader demonstrates its growth trajectory and commitment to innovation.

Today, WTON commands a sizable market share in Indonesia's precast concrete industry. The company's competitive advantages include a strong manufacturing capacity, a large distribution network, and a comprehensive product portfolio that serves a wide range of construction needs, from bridges to high-rise structures. WTON runs multiple manufacturing sites strategically positioned throughout Indonesia to ensure effective distribution and timely delivery of its products. The company's significant experience with large-scale projects has been its strong emphasis on quality and innovation. Their extensive experiences have helped establish the company as a market leader in the precast concrete sector in Indonesia.

WTON has delivered strong financial results. In 2023, the company reported revenues of over IDR5,7 trillion and a net profit margin of about 12%, demonstrating its operational efficiency and profitability. The company's asset base exceeded IDR10 trillion, which demonstrates its ability to grow and invest in new technologies and facilities. WTON's recent financial performance shows a consistent increase in both revenue and profit, indicating a robust demand for precast concrete products in Indonesia's thriving building industry.

With a focus on growing production capacities and improving product quality, WTON is well-positioned to maintain its leadership in the precast concrete sector and contribute significantly to Indonesia's infrastructure development.

PT Waskita Karya Tbk (WSKT)

PT Waskita Karya Tbk. is a well-known Indonesian construction business established in 1961. Founded as a state-owned corporation, it plays an important part in the development of infrastructure projects throughout Indonesia. WSKT underwent a considerable shift in 2012 when it went public and was listed on the Indonesia Stock Exchange under the ticker symbol "WSKT". Since then, the company has expanded its operations to cover a wide variety of construction projects, including toll roads, bridges, airports, and residential buildings.

Among its notable achievements are the completion of numerous important toll roads and urban infrastructure projects, which have considerably boosted Indonesia's connectivity and urban development. WSKT has transformed from a traditional construction firm into a significant leader in the infrastructure industry.

WSKT is a dominant player in the Indonesian construction industry, with a sizable market share. Its competitive advantages stem from its wide project portfolio, strong government ties, and skill in delivering huge and complex infrastructure initiatives. Civil construction, engineering, and investment in toll road concessions are major areas of activity for the corporation as they provide a consistent revenue stream and potential for expansion. WSKT is known for its capacity to manage high-profile projects of Indonesian infrastructure development, such as the Trans-Java Toll Road and the expansion of Soekarno-Hatta International Airport.

WSKT has experienced substantial financial growth. In 2023, the company announced revenues of IDR22 trillion, demonstrating its significant market presence and large project commitments. Despite confronting obstacles such as variable profit margins (a recent net

profit margin of roughly 6%), the company has maintained a strong asset base valued at around IDR80 trillion. The recent financial performance highlights include a focus on debt reduction and improving operational efficiency to increase profitability.

To ensure long-term growth, the company intends to optimize its financial structure and diversify or expand its project portfolio. WSKT is an important part of Indonesia's infrastructure development, positioned to maintain its leadership in the construction industry and contribute to economic growth. The company has demonstrated vital roles in Indonesian infrastructure management and development.

PT Nusantara Infrastructure Tbk (META)

META is a major Indonesian infrastructure investment business founded in 1995. Originally known as PT Sawitia Multipurpose Bank, the corporation underwent extensive reorganization and rebranding in 2006 to focus on infrastructure development. It has subsequently evolved into a prominent participant in Indonesia's infrastructure industry, with expertise in toll road management, water treatment, port services, and telecommunications towers.

The move to an infrastructure-focused corporation marked a watershed moment in its history, allowing META to capitalize on Indonesia's expanding need for infrastructure development. META has grown from a financial institution to a diversified infrastructure corporation, contributing much to the country's infrastructure capacity.

META has a considerable market share in Indonesia's infrastructure industry. The company's competitive advantages include a diverse portfolio, strategic investment, and experience managing and operating critical infrastructure assets. META is a prominent toll road operator, controlling numerous critical routes for regional connectivity. In addition to toll roads, the corporation owns significant stakes in water treatment plants, port services, and telecommunications infrastructure. These conditions have made the company a full-service infrastructure provider. META''s ability to diversify across several industries within the infrastructure domain has enabled this company to manage risks, while at the same time capitalizing on numerous growth prospects.

META has delivered strong financial results. In 2023, the company projected revenues of around IDR2,5 trillion, indicating consistent development driven by its diverse business sectors. Despite a moderate net profit margin of roughly 8%, META has maintained a solid financial basis, with an asset base worth IDR12 trillion. Recent financial highlights include strategic investments in growing its toll road network and improving its water treatment facilities, which aim to sustain long-term revenue development.

The company's focus on sustainable development and infrastructure investment aligns with Indonesia's national development goals. META is well-positioned to maintain its growth trajectory and play a vital role in Indonesia's infrastructure sector, thereby contributing to the country's economic prosperity and improving public services.

PT Adhi Karya Tbk (ADHI)

PT Adhi Karya Tbk is a well-known Indonesian construction and engineering corporation founded on March 11, 1960, as a state-owned enterprise. First, the corporation focused on big construction projects throughout Indonesia, making substantial

contributions to the country's infrastructure development. An important milestone in its history was its first public offering in 2004, which marked its transition into a publicly traded corporation listed on the Indonesia Stock Exchange under the ticker symbol "ADHI".

ADHI's portfolio has grown over time to cover a variety of projects, including residential and commercial structures as well as large-scale infrastructure works including highways, railways, and water treatment plants. The company's evolution illustrates its transformation from a traditional construction company to a comprehensive infrastructure solutions provider.

ADHI has substantial authority in Indonesia's building and infrastructure sectors. The company's competitive advantages include experience in managing complicated projects, a diverse service offering, and strong government contacts, which allow it to gain high-profile contracts. ADHI's main business sectors are civil engineering, construction, property development, and infrastructure project investing. It has played an important role in major national projects such as the Light Rail Transit (LRT) systems and different toll road constructions, which are vital to improving Indonesia's transportation network and urban infrastructure.

ADHI has performed well financially despite the fierce competition in the construction business. In 2023, the company announced revenues of IDR17 trillion, demonstrating its strong market position and substantial project commitments. The company's net profit margin was around 5%, suggesting consistent profitability despite industry headwinds. ADHI's total assets were valued at almost IDR30 trillion, reflecting the company's ability to grow and invest heavily in new projects. Recent financial highlights include a focus on extending the project portfolio and improving operational efficiency to promote future development.

The company is dedicated to improving its financial performance and exploiting its significant experience to secure and complete large-scale infrastructure projects. ADHI continues to play an important role in Indonesia's infrastructure development, with plans to maintain its construction industry leadership and promote the country's economic growth.

ANALYSIS

Descriptive Statistics

Table 1 shows descriptive statistics of mean, most financial ratios decrease, Return on Asset remains stable, and Net Profit Margin increases. This is a sign that the M&A carried out by the five companies has been unprofitable after three years, which are then tested using the Wilcoxon and DEA tests.

Table 1. Descriptive statistics result in the company's ratios

Ratio of Company	N	Mean					
		t-3	t-2	t-1	t+1	t+2	t+3
Current Ratio	5	1,47	1,26	2,39	1,57	1,41	1,54
Cash Ratio	5	0,87	0,68	1,78	0,68	0,45	0,46
Debt Ratio	5	0,69	0,67	0,65	0,62	0,66	0,69
DER	5	2,97	2,63	2,62	1,80	1,93	2,46
ICR	5	24,63	22,84	11,06	6,32	3,70	3,13
FATO	5	16,54	15,88	10,59	7,42	7,98	10,49
TATO	5	0,63	0,56	0,51	0,48	0,42	0,46
ROA	5	0,04	0,04	0,04	0,05	0,04	0,03
ROE	5	0,17	0,17	0,16	0,12	0,09	0,09
NPM	5	0,05	0,11	0,11	0,13	0,13	0,09

Furthermore, Table 2 provides descriptive statistics for industry averages. The DEA is probably decreasing, which indicates that M&A will not improve company performance for three years after it is implemented.

Table 2. Descriptive statistics of industry average

Ratio of Industry Average	N	Mean		
		t+1	t+2	t+3
Current Ratio	5	1,20	1,10	1,04
Cash Ratio	5	0,36	0,33	0,23
Debt Ratio	5	0,69	0,71	0,76
DER	5	2,17	2,25	2,83
ICR	5	2,97	2,94	3,02
FATO	5	7,78	6,66	7,01
TATO	5	0,46	0,38	0,38
ROA	5	0,04	0,03	0,02
ROE	5	0,11	0,08	0,09
NPM	5	0,08	0,07	0,06

Inferential Analysis: Wilcoxon Signed Rank Test Result

This test compares the financial ratios of several Indonesian infrastructure companies before and after M&A. It aims to determine if significant differences are the results of M&A activities. Table 3 shows that they support insignificant results because of financial ratios. For results that are obtained above the significant level of 0.05 or more than 0.05, then H_{01} is accepted. The ratios include Current Ratio, Cash Ratio, Fixed Asset Turnover Ratio, Total Asset Turnover Ratio, Debt Ratio, Debt to Equity Ratio, Interest Coverage Ratio, Net Profit Margin, Return on Assets, and Return on Equity.

Table 3. Wilcoxon signed-rank test result

Ratio (x)	N	Mean	Std. Deviation	Z	Asymp. Sig. (2-tailed)
Current Ratio Before	5	1,71	1,38	-0,67	0,5
Current Ratio After	5	1,51	0,85		
Cash Ratio Before	5	1,11	1,71	-0,94	0,345
Cash Ratio After	5	0,53	0,49		
Fixed Asset Turnover Ratio (FATO) Before	5	14,34	10,77	-1,48	0,138
Fixed Asset Turnover Ratio (FATO) After	5	8,63	8,33		
Total Asset Turnover Ratio (TATO) Before	5	0,57	0,34	-1,6	0,109
Total Asset Turnover Ratio (TATO) After	5	0,45	0,24		
Debt Ratio Before	5	0,67	0,16	-0,68	0,498
Debt Ratio After	5	0,66	0,18		
Debt to Equity Ratio (DER) Before	5	2,74	1,73	-0,4	0,686
Debt to Equity Ratio (DER) After	5	2,06	1,18		
Interest Coverage Ratio (ICR) Before	5	19,51	29,76	-1,21	0,225
Interest Coverage Ratio (ICR) After	5	4,39	3,82		
Net Profit Margin (NPM) Before	5	0,09	0,04	-0,13	0,893
Net Profit Margin (NPM) After	5	0,12	0,09		
Return on Assets (ROA) Before	5	0,04	0,02	0	1
Return on Assets (ROA) After	5	0,04	0,02		
Return on Equity (ROE) Before	5	0,17	0,12	-1,1	0,273
Return on Equity (ROE) After	5	0,10	0,04		

Comparison of the Company's Financial Ratios with Industry Average

This study aims to determine whether M&A operations cause a company to score above its rival by using an industry cluster of firms that operate based on the weighted average principal within the same industry as the study company. The ratio of the sample company to the apple-to-apple comparison is then correlated with the outcome of that industry company.

Table 4. Mean comparison of ratio three years after M&A and industry

No	Ratio	Comparison with Industry Average	
		Higher Than Industry average	Lower Than Industry Average
1	Current Ratio	4 companies	1 Company
2	DER Ratio	3 companies	2 companies
3	Total Asset Turnover Ratio	2 companies	3 companies
4	Net Profit Margin Ratio	4 companies	1 Company
5	Return on Asset	4 companies	1 Company
6	Return on Equity	3 companies	2 companies

Tables 4, 5, and 6 suggest that if the comparison was made between the company's financial ratio after M&A with the industry average, the result is that most of the company's financial ratios are above the average, which in 6 (six) ratios, Current Ratio, DER Ratio, Total Asset Turnover Ratio, Net Profit Margin, Return on Asset, and Return on Equity, are the ratios with the majority number of companies that perform above industry average.

Only the Total Asset Turnover Ratio has a different result, i.e., the company mostly outperforms the industry average. This strengthens the assumption that in 3 (three) years, M&A does not improve the company's financial performance.

Table 5. Mean comparison of Current Ratio three years after M&A and industry average breakdown per ratio (cont'd)

Code	Sample Company	Current Ratio (x)			DER Ratio (x)			TATO Ratio (x)		
		Industry Average	After M&A	Difference	Industry Average	After M&A	Difference	Industry Average	After M&A	Difference
JSMR	PT Jasa Marga Tbk	1,12	0,65	-0,47	2,42	2,52	0,10	0,40	0,34	-0,06
WTON	PT Wijaya Karya Beton Tbk	1,20	1,36	0,16	2,05	0,69	-1,36	0,41	0,73	0,32
WSKT	PT Waskita Tbk	0,92	1,09	0,17	3,13	3,27	0,14	0,41	0,37	-0,04
META	PT Nusantara Infrastructure Tbk	1,20	3,01	1,81	2,05	0,88	-1,17	0,41	0,14	-0,27
ADHI	PT Adhi Karya Tbk	1,12	1,42	0,30	2,42	2,94	0,52	0,40	0,66	0,26

Table 6. Mean Comparison of Ratio 3 (three) Years After M&A and Industry Average Breakdown Per Ratio

Code	Sample Company	NPM Ratio (%)			ROA %			ROE %		
		Industry Average	After M&A	Difference	Industry Average	After M&A	Difference	Industry Average	After M&A	Difference
JSMR	PT Jasa Marga Tbk	0,07	0,10	0,03	2,94%	3,20%	0,26%	0,10	0,11	1,28%
WTON	PT Wijaya Karya Beton Tbk	0,08	0,08	0,00	3,15%	6,12%	2,98%	0,09	0,10	0,64%
WSKT	PT Waskita Tbk	0,06	0,07	0,01	2,52%	2,95%	0,43%	0,10	0,13	2,53%
META	PT Nusantara Infrastructure Tbk	0,08	0,29	0,21	3,15%	4,03%	0,88%	0,09	0,08	-1,67%
ADHI	PT Adhi Karya Tbk	0,07	0,05	-0,02	2,94%	2,79%	-0,15%	0,10	0,08	-1,84%

Company's financial ratio is lower than Industry Average

Company's financial ratio is higher than Industry Average

DEA Analysis

The researchers also conducted a Data Envelopment Analysis through the five major companies in the industry: PT Jasa Marga Tbk, PT Wijaya Karya Beton Tbk, PT Waskita Karya Tbk, PT Nusantara Infrastructure Tbk, and PT Adhi Karya Tbk. The calculations of the DEA analysis revealed that only one company has successfully increased its efficiency score after M&A, and that is PT Adhi Karya Tbk (see Table 7). The other four companies experience declining efficiency scores. For Adhi Karya, the efficiency score has increased by 0,019%. According to the company's financial statement and M&A process, Adhi Karya did merge with its subsidiary company so it makes sense that its fixed assets experienced tremendous growth while their synergy aligned.

Table 7. DEA comparison before and after M&A

Company	Year	Input 1 Fixed Asset	Input 2 Salary	Output 1 Revenue	Efficiency Score
JSMR	2012	422.506.867	1.085.623.357	9.070.219.074	
	2013	593.028.346	1.196.198.582	10.294.667.635	0,991
	2014	701.727.320	1.288.704.552	9.175.319.005	
	2015	913.842.793	1.585.759.184	9.848.242.050	
	2016	884.665.521	1.928.883.897	16.661.402.998	0,634
	2017	1.035.922.309	1.955.442.108	35.092.196.191	
WTON	2011	429.643.841	46.274.002	1.635.086.530	
	2012	584.605.241	57.956.089	2.030.596.831	0,948
	2013	1.012.106.939	88.911.003	2.643.724.434	
	2014	1.671.205.371	137.428.718	3.277.195.052	
	2015	1.997.514.941	184.859.486	2.652.622.140	0,869
	2016	2.223.141.399	207.697.090	3.481.731.506	
WSKT	2014	621.791.835	246.993.162	10.286.813.284	
	2015	1.923.143.995	290.631.919	14.152.752.847	0,966
	2016	3.013.846.252	427.464.463	23.788.322.626	
	2017	4.742.288.130	837.112.171	45.212.897.632	
	2018	7.091.121.159	1.034.852.971	48.788.950.838	0,871
	2019	8.663.216.063	786.179.050	31.387.389.629	
META	2011	1.194.180.331.161	20.076.134.264	232.000.095.750	
	2012	17.903.603.604	28.104.650.536	270.397.259.548	1
	2013	35.769.060.147	42.498.894.232	425.860.507.655	
	2014	120.066.714.671	83.756.469.535	518.377.770.555	
	2015	122.662.024.967	89.333.571.284	618.207.961.796	0,952
	2016	201.144.275.649	91.607.729.073	986.831.041.277	
ADHI	2012	187.437.135	148.773.789	7.627.702.794	
	2013	271.256.911	208.316.201	9.799.598.396	0,955
	2014	496.095.844	218.378.193	8.653.578.309	
	2015	895.346.084	237.726.765	9.389.570.098	
	2016	1.199.799.658	256.363.302	11.063.942.850	0,974
	2017	1.520.930.722	318.713.090	15.156.178.074	

The above table shows that JSMR's revenue grew exponentially after the acquisition for the following three years. However, the asset remained constant. The efficiency score found was -0,357, which indicates that the company did not utilize its fixed assets efficiently and that the synergy was not good after the acquisition. Another thing is that JSMR also accumulated a lot of debt after the acquisition. It also adds more expenses and costs for the company to grow. Thus, while FAT and TATO increase after the acquisition, there is not much difference since the liabilities also increase. This means the company must pay interest expenses and debt throughout the year.

The second company is WTON, a subsidiary of PT Wijaya Karya. WTON experienced a decrease in its efficiency score, for as much as -0,079, while the WTON fixed asset increased. The utilization of the fixed assets is not good. This is proven by the revenue that remained constant throughout the following three years of the acquisition and, again, the lack of synergy.

The third company on the line is WSKT (Waskita). The efficiency score and the acquisition have successfully added a lot of fixed assets to this company. However, the liabilities side of the company reveals a

tremendous increase and indicates that this company, at some point after the acquisition, is leveraged. Again, this causes the company to experience bottlenecks and force it to operate with a low-profit margin.

The next company, Nusantara Infrastructure, shows a lower efficiency score of -0,048. However, the liabilities and the fixed assets of this company grow together and increase revenue. The results show an increase in employee salaries, which might explain the decrease in efficiency scores in the company. Therefore, the company needs to cover it up with more revenue in the upcoming year. However, if the employee salaries keep increasing, the efficiency score will also decline further, thus leading the company to experience another bottleneck situation.

Further Reflection

Based on the results of average analysis, M&A activities have brought negative effects (some of them are small, but still negative) to within 3 (three) years, especially the cash ratio. After M&A, the cash ratio is directly reduced by one time, and the fixed assets increase. At the same time, the average current ratio decreases, ROE decreases, and TATO decreases, but ROA and debt ratio remain unchanged. This indicates that most of the performance is poor, and the company's efficiency is not high after the merger.

The result of the M&A of the different companies in infrastructure indicates that the activities were administered with no synergy. Therefore, the financial ratios statistically result in an insignificant difference. This might be related to the improper acquisition or target firm selection, as well as the acquiring company's lack of experience with M&A. Companies mostly employ outside (debt money) to finance firm operations and/or transactions in M&A activities. Funds used to finance M&A incur considerable expenditures, ensuring that the company's leverage remains constant.

Since the TATO of the companies in this research exceeds the industry average, companies can utilize their assets. Some use debt when doing the M&A, and there is a potential that other companies increase sales significantly. The fact implies that Indonesian infrastructure companies still face many challenges in increasing their efficiency since all of the companies lack financial efficiency.

The researchers found that the financial efficiency after M&A was not optimistic. The mean in Table 7 shows that the ICR is significantly reduced. The average Total Asset Turnover Ratio is smaller after the M&A than before the M&A. If Net sales are stable, most companies adjust and increase total assets. This M&A show that the incentive for M&A can be to make higher in fixed assets.

CONCLUSION

The following points mainly summarize the analysis and interpretation results:

1. Based on the Wilcoxon Signed Rank Test Result, M&A shows a considerable financial impact on these five companies with regard to the changes in fixed assets and ICR. Fixed assets increase, while at the same time, enterprises' long-term solvency weakens. Other internal financial ratios have changed but are not significant. The findings imply that after three years of M&A, the companies' financial performances still cannot improve statistically significantly.

2. M&A activities do not improve the companies' financial and efficiency performance, but more than 50% of the company's financial ratio exceeds industry financial ratios. Therefore, there is a chance for companies to improve their performance in the future.

3. In general, although the results of M&A in recent years have not had a great positive impact on financial performance, they meet the company's purpose of implementing M&A to increase fixed assets.

4. M&A activities reduce liquidity. This can be caused by M&A occupying a large amount of liquidity resources. Then, multiple interest protections should be significant to make the enterprise's long-term solvency more robust. Should the interest coverage ratio be too low, the security and stability of enterprise debt repayment would be at significant risk. To solve this problem, the merged company should consider reducing costs or increasing profits as much as possible.

5. As a part of our policy recommendations for State-Owned Enterprises (SOEs), before allowing infrastructure companies to engage in M&A, the government must consider several key considerations to ensure that these activities are beneficial to the economy, competitive, and aligned with national interests. These reflect alignment with the national goals, establishment of robust risk management frameworks to identify and mitigate potential risks associated with the M&A (such as financial, operational, and reputational risks) and establishment of mechanisms for ongoing monitoring and evaluation of the M&A's outcomes (in terms of the financial performance, operational efficiency, and strategic alignment).

ABOUT THE AUTHORS

Chandra Setiawan is a senior lecturer with over 30 years of teaching experience. He holds two PhD degrees and specializes in education management and finance, with a focus on Islamic finance.

Perina Amelia is pursuing her Master's degree and currently working as a Financial Data Analyst (FDA) in a finance department of a publicly listed company.

REFERENCES

Ahmed, M., & Ahmed, Z. (2014). Mergers and acquisitions: Effect on financial performance of manufacturing companies of Pakistan. *Middle-East Journal of Scientific Research*, *21*(4), 706–716. https://doi.org/10.5829/idosi.mejsr.2014.21.04.21565

Charnes, A., Cooper, W. W., & Rhodes, E. (1978). Measuring the efficiency of decision making units. *European Journal of Operational Research*, *2*(1), 429–444. https://doi.org/https://doi.org/10.1016/0377-2217(78)90138-8

Chaudhary, G. M., & Arshad, A. (2016). Impact of privatization upon efficiency of enterprises: Evidence from the banking sector of Pakistan. *Journal of Business Studies Quarterly*, *7*(3), 47–61.

Chiplin, B., & Wright, M. (1987). *The logic of mergers: The competitive market in corporate control in theory and practice*. Institute of Economic Affairs.

Daryanto, W. M., Jaya, C. I., & Hakim, I. L. (2020). Measuring financial performance of construction companies during infrastructure development in Indonesia. *International Journal of Business, Economics, and Law*, *23*(1), 243–254. https://ijbel.com/wp-content/uploads/2021/06/IJBEL24-727.pdf

Etikan, I., Musa, S. A., & Alkassim, R. S. (2017). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, *9*(5), 1–4. https://doi.org/https://doi.org/10.11648/j.ajtas.20160501.11

Ganti, A. (2024). *Hostile takeover explained: What it is, how it works, and examples*. Investopedia. https://www.investopedia.com/terms/h/hostiletakeover.asp

Gordon, J. (2024). *Vertical merger: Explained*. The business professor. https://thebusinessprofessor.com/en_US/business-transactions/vertical-merger-definition

Hariyani, I., Serfianto, R., & Yustisia S., C. (2011). *Merger, akuisisi, konsolidasi, dan pemisahan perusahaan: Cara cerdas mengembangkan dan memajukan perusahaan*. Visimedia.

Jayaraman, A. R., & Srinivasan, M. R. (2014). Performance evaluation of banks in India: A Shannon-DEA approach. *Eurasian Journal of Business and Economics*, *7*(13), 51–68. https://www.ejbe.org/EJBE2014Vol07No13p051JAYARAMAN-SRINIVASAN.pdf

Junni, P., & Teerikangas, S. (2019). Mergers and acquisitions. In *Oxford Research Encyclopedia of Business and Management*. https://doi.org/10.1093/acrefore/9780190224851.013.15

Kasim, Y., Marwah, S., & Nugraha, M. E. (2022). Performance of mergers and acquisitions in go public company. *Tadulako Social Humaniora Journal, 3*(1), 1–12. https://doi.org/10.22487/sochum.v3i1.15733

Kliestik, T., Valaskova, K., Lazaroiu, G., Kovacova, M., & Vrbka, J. (2020). Remaining Financially healthy and competitive: The role of financial predictors. *Journal of Competitiveness*, *12*(1), 74–92. https://doi.org/10.7441/joc.2020.01.05

Krejnus, M., Stofkova, J., Stofkova, K.R., & Binasova, V. (2023). The use of the DEA method for measuring the efficiency of electronic public administration as part of the digitization of the economy and society. *Appl. Sci. 2023, 13,* 3672. https://doi.org/10.3390/ app13063672

Office of Assistant to Deputy Cabinet Secretary for State Documents & Translation (2017). *Infrastructure development aims to create higher economic growth, President Jokowi says.* https://setkab.go.id/en/infrastructure-development-aims-to-create-higher-economic-growth-president-jokowi-says/

PT Adhi Karya Tbk. (2015). *Annual report: Beyond construction and transformation*.

PT Jasa Marga Tbk. (2015). *Annual report: Developing infrastructure to accelerate national economic growth*.

PT Nusantara Infrastructure Tbk. (2014). *Annual report: Accelerating infrastructure development*.

PT Waskita Karya Tbk. (2017). *Annual report: Economic growth acceleration through infrastructure development*.

PT Wijaya Karya Beton Tbk. (2014). *Annual report: New horizon for a brighter future*.

Rohra, N., & Chawla, K. (2015). Motives behind mergers & acquisitions: Theory & critical review of literature. *EPRA International Journal of Economic and Business Review*, *3*(4), 253–257. https://ssrn.com/abstract=2759834

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach* (7th ed.). Wiley.

Serly, S., & Eddy, E. (2020). The effect of financial ratios in detecting fraudulent company listed on the indonesia stock exchange. *Global Financial Accounting Journal, 4*(2), 39–55. http://doi.org/10.37253/gfa.v4i2.1232

Setiawan, C., Suraji, A., Simbolon, A., Prameswara, A. F., Ridwan, A., & Effendi, B. (2021). *Dua dekade penegakan hukum persaingan: Perdebatan dan isu yang belum terselesaikan*. Komisi Pengawas Persaingan Usaha (KPPU).

Taringan, J., Claresta, A., & Hatane, S. E. (2018). Analysis of merger & acquisition motives in indonesian listed companies through financial performance perspective. *Kinerja*, *22*(1), 95–112. https://doi.org/10.24002/kinerja.v22i1.1570

Whitaker, S. C. (2012). *Mergers and acquisitions integration handbook*. Wiley.

Yadong, C., Lee, L. C., Kee, P. L., & Quah, K. (2019). The impact of mergers and acquisitions on financial performance of listed companies in China. *International Journal of Entrepreneurship and Management Practices, 2*(8), 1–12. https://doi.org/10.35631/ijemp.28001