

Segmentation of Construction Companies Based on Financial Performance Indicators for Acquisition Using K-Means

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Abstract

The acquisition process in the construction industry requires careful evaluation of potential targets, particularly regarding financial performance. Data-driven segmentation has become a strategic method to group companies based on financial characteristics, enabling objective acquisition decisions. This study applies the K-Means Clustering algorithm to segment construction companies using key financial indicators, including P/E ratio, Price-to-Book Value (Price to BV), D/E ratio, ROA, ROE, and NPM. Secondary data from financial statements of construction companies listed on the Indonesia Stock Exchange (IDX) during 2023–2024 were analyzed. Five clusters were identified, reflecting varying levels of financial performance and risk. Among the 23 companies studied, 18 experienced a decline in performance. Notably, PT Totalindo Eka Persada Tbk showed the most significant decline, with a high D/E ratio and negative NPM, suggesting it as a potential acquisition target at a lower price. Post-acquisition, financial and operational restructuring, governance improvements, project diversification, and cost-efficiency measures are recommended. Each cluster presents distinct characteristics relevant for acquisition strategy; for example, high-profitability but low-solvency clusters may attract high-risk investors. This study demonstrates how data mining techniques support corporate due diligence and strategic decision-making, offering a structured approach to identify companies with differing financial strengths and weaknesses. The findings contribute to advancing quantitative approaches in acquisition planning, highlighting how clustering techniques can enhance objective evaluation and strategic alignment in mergers and acquisitions.

Keywords:

company segmentation; financial performance; acquisition; K-Means; construction industry

INTRODUCTION

The construction industry is one of the economic sectors that has a vital and strategic role, particularly in supporting national infrastructure development and promoting long-term economic growth. Its role extends beyond physical development—such as roads, bridges, buildings, and other public facilities—to acting as a catalyst for economic activity across sectors. In many developing countries, including Indonesia, the construction industry is a key pillar in industrialization and regional modernization (Apriliyanto & Heikal, 2025). Beyond producing infrastructure output, this sector generates a significant multiplier effect by increasing labor absorption and raising household incomes. According to the Central Statistics Agency (BPS, 2022), the construction sector's contribution to Indonesia's Gross Domestic Product (GDP) has been rising year by year, mainly driven by accelerated national

strategic infrastructure projects, including toll roads, ports, airports, and other public facilities. This trend underscores the importance of the construction industry as a primary engine for achieving national development goals (Arini & Amorine, 2024). Ensuring the stability and sustainability of this sector is crucial for inclusive and sustainable economic growth.

Despite its importance, the construction industry has unique characteristics that distinguish it from other sectors. One is its high dependence on projects, resulting in fluctuating and non-recurring revenue. Construction companies also face external challenges, including rising raw material prices, late payments from project owners, regulatory uncertainty, and high project management risks. Internally, firms must carefully manage cash flow, financing structure, and operational efficiency to maintain sustainability (Wibowo & Aulanni'am, 2020).

In this competitive and uncertain environment, many construction companies pursue inorganic growth strategies to maintain sustainability and strengthen market position. Acquisition—taking ownership or control of another company—is among the most common strategies. Acquisitions allow firms to expand market reach, increase production capacity, acquire strategic resources, and reduce competition (Tandelilin, 2010). However, acquisition success depends not only on the transaction but also on accurately selecting targets that match the acquiring company's objectives and risk profile.

Target assessment and selection require precise financial analysis to evaluate feasibility and corporate health. Financial performance analysis is particularly critical because it objectively reflects a company's stability, efficiency, and operational sustainability potential. A common problem arises when a target's financial condition does not meet ideal criteria in profitability, capital structure, or operational efficiency. For example, PT Totalindo Eka Persada Tbk, listed on the Indonesia Stock Exchange, exhibited problematic financial indicators in its 2023 report: an unhealthy debt-to-capital ratio, negative NPM, and a PBV below book value. These metrics indicate debt dependence, operational inefficiencies, and low investor confidence.

Managing and analyzing financial data from dozens or hundreds of potential targets manually is time-consuming and prone to subjectivity. In this context, data mining and machine learning approaches are increasingly adopted to systematically classify, filter, and assess companies based on numerical data. Among these methods, K-Means Clustering—a popular unsupervised learning algorithm—iteratively partitions data into clusters based on feature similarity (Jain, 2010). Using K-Means, firms can be grouped into clusters with homogeneous financial characteristics within clusters and heterogeneous characteristics between clusters. This approach is particularly useful in acquisitions, as companies in the same cluster can be considered candidates with comparable financial performance and risk profiles.

K-Means has proven effective in various studies for business segmentation, market identification, and credit risk evaluation (Han, Kamber, & Pei, 2012). More specifically, it has been applied to classify companies based on financial performance, simplifying investment and managerial decision-making. In the construction sector, research combining K-Means with financial analysis for acquisitions remains limited. Given the sector's unique

characteristics and complex financial dynamics, a clustering-based approach can provide a clear classification map of potential acquisition targets, optimize due diligence, reduce decision-making errors, and accelerate evaluation processes.

The growing need for efficiency and accuracy in strategic decision-making makes this research relevant for academics, industry practitioners, investors, and financial analysts seeking a comprehensive understanding of construction company performance. K-Means-based segmentation can effectively filter, compare, and evaluate firms in analytics-driven acquisitions. The study aims to contribute to acquisition target selection strategies, enrich research on machine learning applications in financial management, and offer an objective, data-driven alternative to conventional, intuition-based methods.

Specifically, this study collects and analyzes financial data from construction companies listed on the Indonesia Stock Exchange (IDX) and classifies them into clusters based on financial performance indicators using the K-Means algorithm. The study further interprets the segmentation results and provides recommendations regarding the most ideal financial profile for acquisition targets.

METHODS

This research was a quantitative study that used the K-Means Cluster method in SPSS to obtain company mapping. The data used were secondary data in the form of Financial Statements of Infrastructure Companies with the subcategory of Heavy Constructions and Civil Engineering whose shares were traded on the Indonesian capital market. The researcher collected the Financial Statements from the Indonesia Stock Exchange (IDX) as of 2023 and 2024 through the www.idx.co.id website. Astuti (2020) argued that Financial Statements are among the most important indicators for providing information about a company's development and can also be used to assess its past, present, and future achievements. Therefore, the use of Financial Statements in this analysis was appropriate to describe a company's financial performance.

The data extracted from the Financial Statements included Earnings per Share (EPS), Book Value, and several financial ratios such as P/E ratio, Price-to-Book Value (Price to BV), D/E ratio, ROA, ROE, and NPM. These ratios served as indicators of the company's financial performance. EPS, P/E ratio, and Price to BV are valuation or market-based ratios used to estimate the value of a company's shares. ROA, ROE, and NPM are profitability ratios that describe a company's ability to generate profits. The D/E ratio is a solvency ratio that measures a company's ability to fulfill its obligations. The focus of this research was to cluster construction companies experiencing financial distress based on financial performance over the last two years, identifying those with low acquisition value.

Based on IDX data for infrastructure companies in the heavy constructions and civil engineering subcategory, there were 25 issuers in 2023 and 29 issuers in 2024. To analyze financial performance trends, this study selected 23 construction issuers that published complete financial statements in both years. Before performing the K-Means analysis in SPSS, the number of segmentation clusters was determined. In this study, five clusters were used, with the following indicators:

Table 1. Segment Segmentation Indicator

No	Indicator Sequence	Segments				
		A (Excellent)	B (Good)	C (Moderate)	D (Bad)	And (Very Bad)
1	EPS, IDR	Largest	<A	<B	<C	<D
2	Book Value, IDR	Largest	<A	<B	<C	<D
3	P/E Ratio, x	Largest	<A	<B	<C	<D
4	Price to BV, x	Largest	<A	<B	<C	<D
5	D/E Ratio, x	Lowest	>A	>B	>C	>D
6	LENGTH, %	Largest	<A	<B	<C	<D
7	ROE, %	Largest	<A	<B	<C	<D
8	NPM, %	Largest	<A	<B	<C	<D

Source: Secondary data processed from the financial statements of construction companies listed on the Indonesia Stock Exchange (IDX), 2023–2024

By conducting an analysis using K-Means, it can be found that companies are experiencing a decline in segments. The decline in the segment shows that the company is experiencing financial distress due to declining performance and declining market expectations which can be used as one of the inputs to determine companies that have the potential to be acquired because of their low prices.

RESULTS AND DISCUSSION

Of the 23 construction issuer companies included in IDX, the researcher conducted an analysis using the K-Means Cluster in the SPSS application to segment it. The results of the segmentation are as follows:

Table 2. Results of K-Means Analysis based on the 2023 Financial Statement

Number of Cases in each Cluster	
Cluster	1,000
	2,000
	17,000
	2,000
	1,000
Valid	23,000
Missing	0,000

Source: Results of data processing using the K-Means Clustering method with SPSS based on the financial statements of construction companies in 2023

Table 3. Results of the K-means Analysis based on the 2024 Financial Statement

Number of Cases in each Cluster		
Cluster	1	1,000
	2	3,000
	3	17,000
	4	1,000
	5	1,000
Valid		23,000
Missing		0,000

Source: Results of data processing using the K-Means Clustering method with SPSS based on the financial statements of construction companies in 2024

Based on the results of the K-Means analysis, segmentation is carried out by considering the indicators of segment division as shown in table 2 above, so that the following results are obtained:

Table 4. Construction Company Segmentation Results in 2023

	Cluster				
	1	2	3	4	5
EPS, IDR	- 21,99	- 318,92	2,76	124,56	59,74
Book Value, IDR	3,77	1.062,34	219,41	1.355,69	2.435,16
P/E Ratio, x	- 13,91	12,37	2,93	17,96	7,16
Price to BV, x	81,23	0,34	1,08	0,48	0,18
D/E Ratio, x	0,66	2,98	1,54	2,09	2,93
LENGTH, %	- 352,04	- 3,90	2,64	4,18	0,62
ROE, %	- 583,81	- 25,82	- 1,85	7,74	2,45
NPM, %	- 893,27	- 18,14	- 0,86	8,41	3,03
SEGMENT	And	D	C	A	B
Number of Cases	1,000	2,000	17,000	2,000	1,000
COMPANY CODE	RONY	SSIA	ACST	ADHI	PTPP
		WIKA	BDKR	BUKK	
			DGIK		
			IDPR		
			JKON		
			COCA		
			KRYA		
			NRCA		
			PBSA		
			PPRE		
			PTPW		
			SMKM		

		TAMA		
		TOPS		
		TOTL		
		PATHS		
		WSKT		

Source: Secondary data processed from the financial statements of construction companies listed on the Indonesia Stock Exchange (IDX) in 2023

Table 5. Construction Company Segmentation Results in 2024

Cluster					
	1	2	3	4	5
EPS, IDR	- 8,55	136,16	9,10	0,14	82,09
Book Value, IDR	12,47	1.563,02	246,27	3,95	2.452,69
P/E Ratio, x	- 0,12	8,24	6,53	13.330,39	4,09
Price to BV, x	0,08	0,49	1,34	459,69	0,14
D/E Ratio, x	2,90	1,28	3,20	0,80	2,81
LENGTH, %	- 17,57	4,43	2,30	1,91	0,88
ROE, %	- 68,57	7,72	- 19,56	3,45	3,35
NPM, %	- 678,46	14,50	- 0,80	8,48	3,63
SEGMEN	And	A	D	B	C
Number of Cases	1,000	3,000	17,000	1,000	1,000
COMPANY CODE	TOPS	ADHI	ACST	RONY	PTPP
		BUKK	BDKR		
		SSIA	DGIK		
			IDPR		
			JKON		
			COCA		
			KRYA		
			NRCA		
			PBSA		
			PPRE		
			PTPW		
			SMKM		
			TAMA		
			TOTL		
			PATHS		
			WIKA		
			WSKT		

The results of the K-Means analysis in tables 5 and 6 show that there are several companies that have experienced performance changes. Some of the companies are as follows:

Table 6. Changes in Company Performance

1	PT Adhi Karya (Persero) Tbk.	ADHI	A	Excellent	A	Excellent	Fixed	0
2	Opening Teknik Utama Tbk	BUKK	A	Excellent	A	Excellent	Fixed	0
3	PP (Persero) Tbk	PTPP	B	Good	C	Moderate	Get Down	-1
4	PT Acset Indonusa Tbk.	ACST	C	Moderate	D	Bad	Get Down	-1

5	PT Berdikari Foundation Perkasa Tbk.	BDKR	C	Moderate	D	Bad	Get Down	-1
6	Nusa Konstruksi Enjiniring Tbk	DGIK	C	Moderate	D	Bad	Get Down	-1
7	PT Indonesia Pondasi Raya Tbk.	IDPR	C	Moderate	D	Bad	Get Down	-1
8	Jaya Construction Manggala Pratama Tbk	JKON	C	Moderate	D	Bad	Get Down	-1
9	PT Koka Indonesia Tbk.	COCA	C	Moderate	D	Bad	Get Down	-1
10	PT Bangun Karya Perkasa Jaya Tbk	KRYA	C	Moderate	D	Bad	Get Down	-1
11	PT Nusa Raya Cipta Tbk.	NRCA	C	Moderate	D	Bad	Get Down	-1
12	PT Paramita Bangun Sarana Tbk	PBSA	C	Moderate	D	Bad	Get Down	-1
13	PT PP Presisi Tbk.	PPRE	C	Moderate	D	Bad	Get Down	-1
14	PT Pratama Widya Tbk.	PTPW	C	Moderate	D	Bad	Get Down	-1
15	PT Sumber Mas Konstruksi Tbk	SMKM	C	Moderate	D	Bad	Get Down	-1
16	PT Lancartama Sejati Tbk.	TAMA	C	Moderate	D	Bad	Get Down	-1
17	PT Totalindo Eka Persada Tbk.	TOPS	C	Moderate	And	Very Bad	Get Down	-2
18	Total Bangun Persada Tbk	TOTL	C	Moderate	D	Bad	Get Down	-1
19	PT Wijaya Karya Building Building Tbk.	PATHS	C	Moderate	D	Bad	Get Down	-1
20	PT Waskita Karya (Persero) Tbk	WSKT	C	Moderate	D	Bad	Get Down	-1
21	PT Surya Semesta Internusa Tbk	SSIA	D	Bad	A	Excellent	Rise	3

22	PT Wijaya Karya (Press) Tbk	FISH	D	Bad	D	Bad	Fixed	0
23	PT Aesler International Group Tbk	RONY	And	Very Bad	B	Good	Rise	3

Source: Results of the analysis of changes in the financial performance segmentation of construction companies for the 2023–2024 period processed by the researcher

In table 7 above, there are 3 companies in the same segment position, 2 companies that have experienced an increase in financial performance and 18 companies that have experienced a decrease in financial performance from 2023 to 2024. The two companies that can maintain excellent performance in 2023 to 2024 are PT Adhi Karya (Persero) Tbk and Bukaka Teknik Utama Tbk, for PT Wijaya Karya (Persero) Tbk has not been able to improve performance so that it remains in a poor performance position. Significant performance improvements were experienced by PT Surya Semesta Internusa Tbk and PT Aesler Grup Internasional Tbk. Performance decline was experienced by most construction companies, even PT Totalindo Eka Persada Tbk experienced a 2-point performance decline from moderate to very poor. The following is a table of construction companies that are experiencing financial distress seen in the decline in financial performance.

Table 7. Financial Ratios of Construction Companies Experiencing Financial Distress in 2023

No	Company Name	Stock Code	Financial Ratios							
			EPS, IDR	Book Value, IDR	P/E Ratio, x	Price to BV, x	D/E Ratio, x	LENGT H, %	ROE, %	NPM, %
1	PP (Persero) Tbk	PTPP	59,74	2.435,16	7,16	0,18	2,93	0,6244	2,4534	3,0297
2	PT Acset Indonusa Tbk.	ACST	-29,44	40,90	-4,62	3,33	3,97	-14,4767	-71,9877	-23,6123
3	PT Berdikari Pondasi Perkasa Tbk.	BDKR	15,61	160,78	33,31	3,23	0,94	5,0011	9,7081	16,5214
4	Nusa Konstruksi Enjiniring Tbk	DGIK	6,37	112,84	15,06	0,85	0,54	3,6667	5,6494	11,8324
5	PT Indonesia Foundation Raya Tbk.	IDPR	-8,56	305,58	-16,25	0,45	1,80	-1,0004	-2,7999	-1,8515
6	Jaya Construction Manggala Pratama Tbk	JKON	11,28	177,21	7,89	0,50	0,60	3,9771	6,3645	6,3089
7	PT Koka Indonesia Tbk.	COCA	8,13	27,06	6,15	1,85	0,38	21,7137	30,0550	33,4629
8	PT Bangun Karya Perkasa	KRYA	-1,13	62,37	-50,50	0,91	0,58	-1,1449	-1,8096	-2,1339

	Jaya Tbk									
9	PT Nusa Raya Cipta Tbk.	NRCA	36,22	474,48	9,17	0,70	0,92	3,9688	7,6328	4,5168
10	PT Paramita Bangun Sarana Tbk	PBSA	33,55	197,84	9,12	1,55	0,23	13,7693	16,9589	26,9569
11	PT PP Presisi Tbk.	PPRE	6,01	315,28	13,15	0,25	1,21	0,8618	1,9061	2,3877
12	PT Pratama Widya Tbk.	PTPW	79,02	633,65	12,34	1,54	0,16	10,7825	12,4705	25,8877
13	PT Sumber Mas Konstruksi Tbk	SMKM	7,35	161,48	7,21	0,33	0,04	4,3924	4,5509	11,9276
14	PT Lancartama Sejati Tbk.	TAMA	-4,92	47,02	-3,26	0,34	2,55	-2,9418	-10,4538	-24,7835
15	PT Totalindo Eka Persada Tbk.	TOPS	-4,48	21,00	-2,01	0,43	2,45	-6,1786	-21,3411	-54,1198
16	Total Bangun Persada Tbk	TOTL	39,67	295,84	9,48	1,27	2,02	4,4395	13,4099	6,5126
17	PT Wijaya Karya Building Tbk.	PATHS	16,67	265,14	4,80	0,30	1,09	3,0126	6,2859	6,1966
18	PT Waskita Karya (Persero) Tbk	WSKT	-164,35	431,54	-1,23	0,47	6,77	-4,9042	-38,0850	-60,5700

Source: Secondary data processed from the financial statements of construction companies experiencing financial distress in 2023 on the Indonesia Stock Exchange (IDX)

Table 8. Financial Ratios of Construction Companies Experiencing Financial Distress in 2024

No	Company Name	Stock Code	Financial Ratios							
			EPS, IDR	Book Value, IDR	P/E Ratio, x	Price to BV, x	D/E Ratio, x	LENGT H, %	ROE, %	NPM, %
1	PP (Persero) Tbk	PTPP	82,09	2.452,69	4,09	0,14	2,81	0,8788	3,3468	3,6341
2	PT Acset Indonusa Tbk.	ACST	-31,95	8,64	-2,69	9,95	28,15	-12,6854	-	-19,1853
3	PT Berdikari Pondasi Perkasa Tbk.	BDKR	13,28	171,17	14,31	1,11	0,78	4,3471	7,7580	17,6408
4	Nusa Konstruksi Enjiniring Tbk	DGIK	4,98	117,57	16,07	0,68	0,60	2,6473	4,2340	7,1291
5	PT Indonesia Foundation Raya Tbk.	IDPR	21,01	326,98	8,00	0,51	1,50	2,5751	6,4255	5,3634

Anindiyarta Adi Wardhana, Sarah Mulyan, Raras Herry K, Jerry Heikal

Segmentation of Construction Companies Based on Financial Performance Indicators for Acquisition

Using K-Means

6	Jaya Construction Manggala Pratama Tbk	JKON	14,50	188,33	5,66	0,44	0,39	5,5176	7,6965	9,4676
No	Company Name	Stock Code	Financial Ratios							
			EPS, IDR	Book Value, IDR	P/E Ratio, x	Price to BV, x	D/E Ratio, x	LENGT H, %	ROE, %	NPM, %
7	PT Koka Indonesia Tbk.	COCA	-1,50	60,66	-44,64	1,10	0,14	-2,1665	-2,4743	-7,9196
8	PT Bangun Karya Perkasa Jaya Tbk	KRYA	1,32	63,64	39,29	0,82	0,89	1,1029	2,0796	1,4212
9	PT Nusa Raya Cipta Tbk.	NRCA	40,86	485,88	8,61	0,72	1,15	3,9133	8,4097	4,0247
10	PT Paramita Bangun Sarana Tbk	PBSA	87,87	232,80	4,21	1,59	0,51	25,0116	37,7429	37,0939
11	PT PP Presisi Tbk.	PPRE	4,75	332,23	11,59	0,17	1,29	0,6228	1,4288	1,7847
12	PT Pratama Widya Tbk.	PTPW	77,45	712,11	11,10	1,21	0,20	9,0278	10,8759	24,3811
13	PT Sumber Mas Construction Tbk	SMKM	1,54	162,76	42,74	0,41	0,02	0,9345	0,9488	4,3357
14	PT Lancartama Sejati Tbk.	TAMA	-8,04	38,95	-1,74	0,36	2,86	-5,3488	-20,6528	-50,9445
15	PT Totalindo Eka Persada Tbk.	TOPS	-8,55	12,47	-0,12	0,08	2,90	-17,5681	-68,5712	-678,4565
16	Total Bangun Persada Tbk	TOTL	71,39	325,83	9,53	2,09	1,93	7,4852	21,9096	10,9639
17	PT Wijaya Karya Building Tbk.	PATHS	7,56	270,33	8,47	0,24	0,98	1,4115	2,7961	3,2045
18	PT Waskita Karya (Press) Tbk	WSKT	-13,59	407,88	-17,95	0,60	3,12	-0,8091	-3,3325	-4,3190

Source: Secondary data processed from the financial statements of construction companies experiencing financial distress in 2024 on the Indonesia Stock Exchange (IDX)

From the table above, there are 18 companies that are experiencing financial distress, with financial distress that is quite significant, namely from segment C (moderate) to segment E (very bad) and has the lowest NPM value is PT Totalindo Eka Persada Tbk. In addition, this company also has a low P/E Ratio and Price to BV which can indicate that market expectations and confidence tend to be low so it can be a cheap indication if acquired. In addition, the price to BV value of only 0.08 indicates that the share price is lower than the value of the company's net assets or book value, indicating potential undervalue. Therefore, to get the acquisition with the lowest value, PT Totalindo Eka Persada Tbk can be chosen.

The acquisition of PT Totalindo Eka Persada Tbk may be cheap, but it is also high risk for investors. This acquisition can be of strategic value if it is accompanied by a comprehensive restructuring in the financial, operational, and governance improvements. In

the financial sphere to reduce the D/E Ratio of 2.90, the company must restructure in terms of funding, for example by conducting a rights issue/private placement. Rights issue/private placement is an increase in capital from shareholders to improve the capital structure. With the addition of capital, a decrease in the D/E Ratio will occur. In addition, with an ROA value of -17.5 which indicates that there are assets that are no longer productive, companies can also divest these non-productive assets. The proceeds from the asset divestment can be used as additional working capital or pay part of the high-interest debt to reduce the company's burden and reduce the D/E Ratio.

To reduce the D/E Ratio, the next financial restructuring is debt reprofiling. Debt reprofiling is a renegotiation with creditors to postpone or extend the payment term, change the due date, grace period, debt to equity swap or debt to asset swap. The purpose of debt reprofiling is to reduce interest expenses and increase the company's liquidity so that companies are not pressured by principal installments and bank interest payments in loss-making conditions.

PT Totalindo Eka Persada Tbk also has a P/E ratio of -2.01 in 2023 and decreased in 2024 to -0.12. This negative value indicates that the company is experiencing losses. The ROA and ROE values are also negative, namely -17.5 and -68.5 which indicate that the company cannot generate profits from the assets and capital invested. The negative value in 2024 is greater than the negative value in 2023, indicating the risk of long-term and fundamental losses in the company's operations. This indication is strengthened by an NPM of -678.5. For strategies to improve operational performance, among others, by increasing sales through expanding the construction market segment and diversifying projects, for example, focusing on government projects with a safer payment scheme. To increase profits to be more optimal, in addition to being supported by increased revenue, must also be followed by cost efficiency. Some of the cost efficiencies that can be done include asset optimization, increasing productivity and revitalizing subcontractors. Evaluation of the project that has been obtained must also be carried out, if there is an unprofitable project, it should be renegotiated so that the project can be canceled.

CONCLUSIONS

As of December 2023, there were 25 construction issuers listed on the IDX and 29 as of December 2024, but only 23 submitted complete financial statements. Among these, 78% (18 companies) experienced financial distress, partly due to project delays associated with the 2024 election and uncertainty over subsequent government policies. Companies facing financial distress, such as PT Totalindo Eka Persada Tbk—which showed the largest performance decline—may present opportunities for acquisition at lower prices. However, acquiring underperforming firms poses significant operational challenges, requiring thorough due diligence and post-acquisition restructuring. Recommended strategies include financial restructuring, such as rights issues, private placements, divestment of non-productive assets, and debt reprofiling to improve liquidity and lower the D/E ratio, alongside operational improvements such as market expansion, project diversification, cost efficiency through asset optimization and productivity enhancements, subcontractor revitalization, and receivables optimization. Future research could explore the long-term impact of these post-acquisition

strategies on the financial recovery and market competitiveness of construction companies, as well as the integration of machine learning techniques to better predict high-potential acquisition targets in volatile sectors.

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