Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 6, 9219-9229
2024
Publisher: Learning Gate
DOI: 10.55214/25768484.v8i6.3975

TOPSIS method analysis for company financial performance ranking based on DER, ROA, AND PBV

Novi Natalia Padang[1*], Erlina[2], Iskandar Muda[3], Abdillah Arif Nasution[4]
[1,2,3,4]Fakultas Ekonomi dan Bisnis Universitas Sumatera Utara, Indonesia; novipadang06@gmail.com (N.N.P.) erlina@usu.ac.id v (E.) iskandar1@usu.ac.id (I.M.) badiqq@yahoo.com (A.A.N.).

Abstract: Energy resources are a crucial component of economic and social growth in Indonesia. Energy businesses are a significant part of the national economy, and their performance directly affects the stability of energy supply, economic stability, and the attainment of sustainable development objectives. application of the TOPSIS method (Order Preference Technique with Similarity to Ideal Solution) to initiate and rank the financial performance of energy companies in Indonesia. The main focus of this study is on three financial indicators: Debt to Equity Ratio (DER), Return on Assets (ROA), and Price to Book Value (PBV). The TOPSIS method offers a systematic and objective framework for decision making by normalizing data, assigning weights to each criterion, and calculating the distance from the ideal solution. The results show that this method can effectively rank companies based on their financial metrics, which can facilitate better strategic decision making in the energy sector. This study aims to contribute to the development of information technology-based decision support systems to improve energy resource management in Indonesia and drive sustainable economic growth. In this analysis, the MLBI company achieved the highest ranking with a closeness coefficient of 0.703569, outperforming other companies such as KEJU and AISA. This ranking can be used to guide strategic decisions, improve debt management, and increase stakeholder trust.
Keywords: *Debt to equity ratio, Price to book value, Return on assets, TOPSIS.*

1. Introduction

Energy resources are a crucial component of economic and social growth in Indonesia [1]. Energy businesses are a significant part of the national economy, and their performance directly affects the stability of energy supply, economic stability, and the attainment of sustainable development objectives [2]. The Indonesian government aims to enhance the production and management of energy resources in a more efficient, sustainable, and results-oriented manner. In this environment, assessing the performance of energy companies is vital to guarantee that the sector maximally contributes to economic growth, financial stability, and societal welfare [3].

The assessment of energy firm performance not only ascertains their ability to achieve corporate objectives but also initiates the formulation of strategic policy suggestions. This assessment encompasses multiple financial metrics that indicate operational efficiency, financial stability, and corporate competitiveness. The primary indicators evaluated in these assessments include the Debt-to-Equity Ratio (DER), Return on Assets (ROA), and Price to Book Value (PBV). DERs indicates the proportion of debt to equity in a company's capital structure, where a lower DERs value signifies effective debt management and diminished risk levels. Return on Assets (ROA) is a crucial metric that reflects a company's capacity to create profit via the effective utilization of its assets; elevated ROA values signify superior operational efficiency [4]. PBV denotes the ratio of a company's market value to its book value, hence indicating the market's evaluation of the company's performance[5].

Evaluating the success of energy companies using these measures is challenging, especially when conducted manually. Intricate data analytics, assessment of various alternatives, and the potential for

* Correspondence: novipadang06@gmail.com

bias can adversely affect the precision of evaluation outcomes. This case underscores the significance of methodical, trustworthy, and impartial decision-making processes. Decision Support Systems (DSS) are, however, crucial to this issue. A Decision Support System (DSS) is an information technology-based framework that equips decision-makers with analytical tools to evaluate data and formulate suggestions through organized mathematical models. One of the most prevalent methods for addressing multi-criteria Decision-Making issues in Decision Support Systems (DSS) is the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) [6].

The ACE (A^+), representing the optimal positive values of each criterion, and the ACE (A^-), denoting the optimal negative values of each criterion. An optimal solution is one that is as near as possible to the superior ideal solution and as distant as possible from the inferior ideal solution. In the evaluation of energy firm performance, TOPSIS is a methodology that integrates several criteria, such as DERs, ROA, and PBV, into a systematic assessment framework. This technique facilitates decision-making while enhancing the complexity, transparency, and reliability of the measurement outcomes. In previous research, the AHP [7] VIKOR [7], [8] CIMAS-CRITIC-RBNAR [9] method was also used in company assessment.

Debt-to-Equity Ratio, Return on Assets, and Price-to-Book Value. We chose the method for its capacity to efficiently manage multicriteria data in an objective manner, generating appropriate decision suggestions for strategic objectives. Energy firms can enhance the efficiency of performance assessments, reduce subjectivity, and achieve higher objectivity and results by implementing the TOPSIS technique [10]. Furthermore, we anticipate that the findings of this study will aid in the advancement of IT-based decision-making systems, a critical consideration in the digital era.

The application of the TOPSIS technique offers immediate practical benefits for evaluating corporate performance and also has strategic implications for Indonesia's energy sector. Enhanced evaluation outcomes can serve as a basis for energy organizations to refine their operational strategies, enhance financial management, and bolster market competitiveness. Conversely, the results of this assessment can inform the development of more effective policy recommendations for sustainable energy management.

This research will elucidate the implementation of the TOPSIS technique, encompassing the collecting of valid data, the calculation of criteria weights, and the consequent preference score. This study aims to elucidate the application of the TOPSIS technique in IT-based decision-making systems, particularly addressing the suitability and reliability of the criteria employed. We anticipate that this effort will contribute to the development of a more efficient decision support system to assist in the administration of Indonesia's energy sector, expedite digitalization, and so strengthen measures for sustainable economic growth.
Finally, the preference score (Ci) value for each alternative is calculated using the following formula.

2. Method

The TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) technique provides a systematic and impartial framework for assessing and ranking corporate performance across several parameters. The procedure commences with the formulation of a decision matrix that encompasses evaluation criteria for appraising each company's alternatives. The matrix comprises rows that denote companies (alternatives) and columns that signify the criteria employed in the evaluation. This study utilizes financial records of companies listed on the Indonesia Stock Exchange, employing ROA (Return on Assets) as a performance metric with higher values indicating more returns, and DAR (Debt to Asset Ratio) as a risk metric with lower values signifying reduced liabilities. This matrix is the basis for ensuing calculations.

It is now essential to normalize the choice matrix to ensure that all criteria values are on a uniform scale, facilitating a fair comparison of the options. Normalization standardizes the values of each criterion, regardless of their original scales or units, to a uniform scale. This is accomplished by use the formula

$$Rij = \frac{Xij}{\sqrt{\sum X_{ij}^2}} \tag{1}$$

Here, Rij represents the normalized version of the j-th criterion for the i-th choice, while Xij signifies the original version. This phase ensures that all criteria are assessed on an equivalent basis. Weights are normalized and allocated to each criterion according to their respective significance in the evaluation process. Such weights are determined by practical competence, stakeholder perspectives, or strategic objectives. The normalized matrix is further adjusted by the weights of each criterion to derive the weighted decision matrix according to the formula.

$$Vij = Wj.Rij \tag{2}$$

In which Wj represents the weight of the j-th criterion. This phase emphasizes the significance of each criterion in the evaluation of a company's performance.

Subsequently, the ideal solutions are derived in this order: positive (A^+) and negative (A^-). The optimal state is the good ideal solution, which involves optimizing the benefit criteria and minimizing the cost criteria. Conversely, the poor ideal solution is the optimal state, which involves maximizing the cost criteria and minimizing the benefit criteria. By selecting the maximum and minimum values for each criterion in the weighted decision matrix, these optimal solutions are achieved.

Subsequently, the Euclidean distance formula is employed to determine the value of each alternative from the positive and negative ideal solutions. The distance to the positive ideal solution is determined as

$$D_i^+ = \sqrt{\sum}(Vij - A_j^+)^2 \tag{3}$$

while the distance to the negative ideal solution is

$$D_i^- = \sqrt{\sum}(Vij - A_j^-)^2 \tag{4}$$

where V_{ij} is the weighted normalized value, and the positive and negative ideal solutions of the j -th criterion are A^+j , and A^-j , respectively. Those distances measure the closeness of each alternative to the optimal solution and the distance of an alternative from the worst-case solution.

Finally, the preference score (C_i) value for each alternative is calculated using the following formula.

$$Ci = \frac{D_i^-}{D_i^+ + D_i^-} \tag{5}$$

The preference score ranges from 0 to 1, with elevated preference linked to alternatives nearer to the optimal solution ideal. Alternatives are subsequently rated based on their preference scores, with the greatest score signifying superior firm performance.

The TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution) technique provides an easy, data-driven framework for ranking corporate performance by comprehensively including several criteria within a holistic evaluation system. This methodology is particularly advantageous for assessing financial performance and decision-support systems, where clarity and objectivity are prioritized.

3. Results and Discussion

3.1. Observation Findings

The system that is currently employed to calculate company performance, but particularly for the energy and mining industries, remains manual currently. Company performance data are gathered from different sources, which are not joined, and thus inefficiency, error, and lack of standardization occur. In the evaluation of 27 companies in 2023, the analysis focused on important metrics such as Debt to Equity Ratio (DER), Return on Assets (ROA), and Price to Book Value (PBV). These metrics give us a picture of financial stability, profitability, and market valuation, although traditional manual techniques are often labor-intensive and error prone.

To solve this issue, the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) method provides a better alternative. TOPSIS is used for multi-criteria decision making by evaluating companies in terms of their distance from the optimal solution. The process consists in the data normalization to standardize the scale, assigning weights to each criterion and the calculation of the distance between the positive and negative solutions. The final output is a ranking of companies according to preference scores, thus revealing companies' positions in comparison.

The TOPSIS method is applied to make the evaluation process more accurate, efficient and transparent. In this technique, analysis time is less while the risk is reduced, and timely and data-driven decision making is facilitated. Using this facility, actors can more clearly see the financial performance of the company and therefore more effectively make strategic decisions in the energy and mining business.

3.2. Discussion

The observation results above necessitate the use of an appropriate method to accurately calculate the company's performance as shown in the table. The steps taken in this company performance assessment include a review of all data used in the decision-making process. The financial ratios in the company performance assessment that are criticized include DER, ROA, and PBV. The data that is categorized are the values of DER, ROA, and PBV.

The use of data is identified based on aspects of the company's liquidity ratio, profitability, and valuation. Meanwhile, the determination of criteria, cost-benefit, and attribute values in this assessment has a role as a measuring tool for calculations that can guarantee evaluation in accordance with the established criteria so as to support more effective and objective decisions.

Table 1:
Company DER, ROA, dan PBV data.

Company	DER	ROA	PBV
ADES	0.069	0.222	1.229
AISA	0.028	0.274	1.700
BUDI	0.712	0.023	0.337
CAMP	0.130	0.041	1.848
CEKA	0.243	0.116	0.009
CLEO	0.465	0.101	6.706
COCO	0.800	0.010	0.013
DLTA	0.202	0.101	3.454
DMND	0.220	0.036	1.871
ENZO	0.835	0.004	0.732
GOOD	0.787	0.037	3.234
HOKI	0.369	0.042	3.666
ICBP	0.741	0.072	2.219
IKAN	0.772	0.008	1.772
INDF	0.809	0.054	0.760
KEJU	0.531	0.179	4.610
MLBI	0.819	0.233	1.374
MYOR	0.755	0.106	5.376
PANI	0.001	0.002	0.001
PMMP	0.003	0.041	0.009
PSDN	0.799	0.115	1.558

Company	DER	ROA	PBV
ROTI	0.379	0.038	0.448
SKBM	0.735	0.003	0.581
SKLT	0.779	0.055	2.656
STTP	0.290	0.182	4.655
TBLA	0.002	0.035	0.848
ULTJ	0.057	0.127	3.479

The table below shows financial performance information from different companies based on the three key metrics—Debt to Equity Ratio (DER), Return on Assets (ROA), and Price to Book Value (PBV). DER reflects the level to which a company finances its activities through debt, hence higher values are measured by the higher reliance on debt. ROA indicates the effectiveness of a company in using assets to generate profits, and higher values indicate a more efficient use of owned assets. In the meantime, PBV delivers a summary of the transaction value of the company vs. its book value, where higher values reflect that the market is giving the company a higher valuation. We are able to perform comprehensive analysis of a company's performance to evaluate its financials in this data analysis considering aspects of liquidity, profitability and market valuation, all of which are important for investment decisions and firms in the capital market.

Table 2:
Normalization result data.

Company	DER	ROA	PBV
ADES	0.00560	0.09836	0.02229
AISA	0.00227	0.12140	0.03083
BUDI	0.05774	0.01019	0.00611
CAMP	0.01054	0.01817	0.03351
CEKA	0.01970	0.05140	0.00016
CLEO	0.03771	0.04475	0.12161
COCO	0.06487	0.00443	0.00024
DLTA	0.01638	0.04475	0.06263
DMND	0.01784	0.01595	0.03393
ENZO	0.06771	0.00177	0.01327
GOOD	0.06382	0.01639	0.05865
HOKI	0.02992	0.01861	0.06648
ICBP	0.06009	0.03190	0.04024
IKAN	0.06260	0.00354	0.03213
INDF	0.06560	0.02393	0.01378
KEJU	0.04306	0.07931	0.08360
MLBI	0.06641	0.10323	0.02492
MYOR	0.06122	0.04696	0.09749
PANI	0.00008	0.00089	0.00002
PMMP	0.00024	0.01817	0.00016
PSDN	0.06479	0.05095	0.02825
ROTI	0.03073	0.01684	0.00812
SKBM	0.05960	0.00133	0.01054
SKLT	0.06317	0.02437	0.04816
STTP	0.02352	0.08064	0.08441
TBLA	0.00016	0.01551	0.01538
ULTJ	0.00462	0.05627	0.06309

ISSN: 2576-8484
Vol. 8, No. 6: 9219-9229, 2024
DOI: 10.55214/25768484.v8i6.3976

In the normalization process of the TOPSIS method, the normalized value of the data from all companies of the DER, ROA, and PBV indicators is transformed into a comparable value format for direct comparison. The goal of this normalization process is to reduce any bias that could occur as a result of the unit or scales differently between the criteria to be validated. Table 2 presents the normalization results of the data reported in Table 1. In this table, the DEA-specific normalization equation normalizes each cell of the DER, ROA, and PBV columns, making for easier analysis and comparison. We decreased the DER value from 0.069 to 0.00560, the ROA value from 0.222 to 0.09836, and the PBV to 0.02229. This operation ensures that all the values are in the same scale, which makes the evaluation in the following stages of the TOPSIS method much easier. This consists of determining the distance between the positive and negative ideal solutions, which plays an important role in the final ranking of each company.

Table 3:
Terms of criteria and determination of Weights.

Code	Criteria	Range %	Weight
C1	DER	40	0.4
C2	ROA	40	0.4
C3	PBV	20	0.2

Table 3 reports the estimation of weights for each criterion applied in the TOPSIS technique. Here, we assign a weight to each criterion (i.e., DER, ROA, and PBV) according to their relative weight in the process of decision making. The weight of 40% is given to the DER (C1) and ROA (C2) criteria by the priority analysis according to which their importance in assessing the company performance is emphasis because they are directly related to financial risk and profitability. The PBV (C3) criterion although highly relevant, has a weight of only 20% because of the assumption that it has less impact on company valuation than the DER and ROA criteria. In this step, by applying the above weighting to determine the final score of each alternative in the TOPSIS method, the optimal ranking of all al alternative considering the company's overall performance will be attained.

Table 4:
Normalization weighting result.

Company	DER	ROA	PBV
ADES	0.00224	0.03934	0.00446
AISA	0.00091	0.04856	0.00617
BUDI	0.02309	0.00408	0.00122
CAMP	0.00422	0.00727	0.00670
CEKA	0.00788	0.02056	0.00003
CLEO	0.01508	0.01790	0.02432
COCO	0.02595	0.00177	0.00005
DLTA	0.00655	0.01790	0.01253
DMND	0.00714	0.00638	0.00679
ENZO	0.02708	0.00071	0.00265
GOOD	0.02553	0.00656	0.01173
HOKI	0.01197	0.00744	0.01330
ICBP	0.02404	0.01276	0.00805
IKAN	0.02504	0.00142	0.00643
INDF	0.02624	0.00957	0.00276
KEJU	0.01722	0.03172	0.01672
MLBI	0.02657	0.04129	0.00498
MYOR	0.02449	0.01879	0.01950
PANI	0.00003	0.00035	0.000004

Company	DER	ROA	PBV
PMMP	0.00010	0.00727	0.00003
PSDN	0.02592	0.02038	0.00565
ROTI	0.01229	0.00673	0.00162
SKBM	0.02384	0.00053	0.00211
SKLT	0.02527	0.00975	0.00963
STTP	0.00941	0.03226	0.01688
TBLA	0.00006	0.00620	0.00308
ULTJ	0.00185	0.02251	0.01262

Results of weighted normalization on the TOPSIS approach are presented in Table 4. The weighted factors for these criteria are applied to the normalized values of each criterion (DER, ROA, PBV) in this step. In this process, emphasis is also directed to criteria judged to be more significant, based on the weights indicated in Table 3. For example, the ADES company (multiplied the normalized DER value (0.00560) by a weight of 0.4) resulting in a value of 0.00224. In an analogous fashion, it scales the ROA and PBV values by their weights (resulting in 0.03934 and 0.00446, respectively).The ted normalization procedure generates a final value per company on each criterion and thereby provides an objectively fairer and more comparative evaluation between companies. In the following step, we will apply the outcome of this weighted normalization to calculate the distance between each alternative to the positive and negative ideal solution, which is the mathematical heart of the TOPSIS approach, to rank the companies.

Table 5:
Solusi Ideal Positif (A+) dan Negatif (A-).

A +	0.02708	0.04856	0.02432
A -	0.00003	0.00035	0.000004

Table 5 presents the positive ideal solution (A+ and negative ideal solution (A- of the TOPSIS method. At this point, the upper-limit ideal solution (A+ and the lower-limit ideal solution (A- respectively represents the maximum and minimum possible values for each criterion. We calculate the positive ideal solution (A+ for each criterion, in the basis of the maximum value of the weighted normalization result, i.e., the optimal condition of each criterion. For example, the ROA criterion produces the highest value of 0.04856, an element of the positive idealised solution. As a counterpoint, the bad ideal solution (A− represents the highest values obtained on each criterion. The optimal negative ideal solution for the DER criterion is with a lowest value of 0.00003. Using these positive and negative ideal solutions, the next step in the TOPSIS method is to calculate the distance of each alternative from the positive and negative ideal solutions, which will allow the ranking of companies based on their proximity to the positive ideal solution and the extent to which they avoid the negative ideal solution.

Table 6:
Menghitung Jarak Euclidean ke Solusi Ideal Positif (A+) dan Negatif (A-).

Company	A +	A -
ADES	0.03311	0.03931
AISA	0.03185	0.04861
BUDI	0.05028	0.02340
CAMP	0.05038	0.01050
CEKA	0.04174	0.02168
CLEO	0.03292	0.03355
COCO	0.05272	0.02596
DLTA	0.03874	0.02252
DMND	0.04984	0.01153

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 6: 9219-9229, 2024
DOI: 10.55214/25768484.v8i6.3976

ENZO	0.05253	0.02719
GOOD	0.04388	0.02874
HOKI	0.04517	0.01922
ICBP	0.03944	0.02820
IKAN	0.05046	0.02584
INDF	0.04456	0.02792
KEJU	0.02094	0.03949
MLBI	0.02066	0.04904
MYOR	0.03027	0.03631
PANI	0.06039	0.00001
PMMP	0.05498	0.00692
PSDN	0.03382	0.03321
ROTI	0.04983	0.01392
SKBM	0.05302	0.02390
SKLT	0.04154	0.02860
STTP	0.02517	0.03729
TBLA	0.05455	0.00661
ULTJ	0.03811	0.02556

Table 6 reports the calculation of the Euclidean distance of each company to the positive ideal solution (A+ and the negative ideal solution (A- in the TOPSIS approach. As of this point in time, we compute the Euclidean distance in order to determine the euclidean relative distance between each alternative (company) and the positive and negative optima. A mathematical formula determines this distance, which provides a measure of how far the company is from the optimal solution (A+ and how much freedom it has from the least optimal (A-.

For instance, in the ADES company, the distance between the positive ideal solution (A+ and the negative ideal solution (A- is, respectively, 0.03311 and 0.03931. The companies' position based on the evaluated criteria is better when the distance to the positive ideal solution is reduced. On the other hand, the more distant the system is from the negative ideal solution, the more efficient, as the company is then as far away as possible from the worst scenario. In the next step the Euclidean distance is exploited to compute the preference value of each company, and hence its final position is computed in terms of its distance from the negative ideal and distance from the positive ideal solution.

Table 7:
Menghitung closeness coefficient (C).

Company	Closeness coefficient
ADES	0.542770
AISA	0.604137
BUDI	0.317540
CAMP	0.172454
CEKA	0.341829
CLEO	0.504745
COCO	0.329919
DLTA	0.367683
DMND	0.187814
ENZO	0.341047
GOOD	0.395795
HOKI	0.298521
ICBP	0.416858
IKAN	0.338677
INDF	0.385201

ISSN: 2576-8484
Vol. 8, No. 6: 9219-9229, 2024
DOI: 10.55214/25768484.v8i6.3976

KEJU	0.653499
MLBI	0.703569
MYOR	0.545308
PANI	0.000084
PMMP	0.111740
PSDN	0.495469
ROTI	0.218356
SKBM	0.310765
SKLT	0.407767
STTP	0.597043
TBLA	0.108084
ULTJ	0.401465

Table 7 illustrates the computed Closeness Coefficient (C) values for each company that participated in the TOPSIS approach. Each alternative (company) estimates its closeness coefficient toward the positive ideal solution (A+ and its distance to the negative ideal solution (A- as a size measure. We determine the Closeness Coefficient value by means of the Euclidean distance between previous stage and a formula that includes the company position relative to the positive ideal solution and the company position relative to the negative ideal solution. The higher the value of the Closeness Coefficient, the higher the corresponding performance of the company regarding the comparison of the used criteria.

For example, the MLBI company has the maximum closeness coefficient of 0.703569, meaning it is nearest to the positive ideal solution and furthest from the negative ideal solution. On the other hand, PANI has an extremely low Closeness Coefficient value (0.000084), so that, this company is very distant from the positive ideal information solution and also very close to the negative one. We employ this Closeness Coefficient value to order the companies in terms of their performance from best to worst, giving the highest rating to the company with the greatest C value as the better alternative in the context of making decisions.

Table 8:
Hasil Perangkingan.

Company	Closeness coefficient	Rank
MLBI	0.703569	1
KEJU	0.653499	2
AISA	0.604137	3
STTP	0.597043	4
MYOR	0.545308	5
ADES	0.54277	6
CLEO	0.504745	7
PSDN	0.495469	8
ICBP	0.416858	9
SKLT	0.407767	10
ULTJ	0.401465	11
GOOD	0.395795	12
INDF	0.385201	13
DLTA	0.367683	14
CEKA	0.341829	15
ENZO	0.341047	16
IKAN	0.338677	17
COCO	0.329919	18
BUDI	0.31754	19
SKBM	0.310765	20

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 6: 9219-9229, 2024
DOI: 10.55214/25768484.v8i6.3976

HOKI	0.298521	21
ROTI	0.218356	22
DMND	0.187814	23
CAMP	0.172454	24
PMMP	0.11174	25
TBLA	0.108084	26
PANI	0.000084	27

Table 8 presents the ranking results using the Closeness Coefficient (C) value obtained in the corresponding stage in the TOPSIS approaches. Currently, we sort companies from the highest to the lowest Closeness Coefficient value. This company with the greatest C value is preferred as the optimal alternative, as it is more similar to the positive ideal solution (A+ and less similar to the negative ideal solution (A-.

For example, MLBI achieves the highest ranking with a closeness coefficient of 0.703569, highlighting its better performance than other candidate methods. After KEJU obtained the second rank with a closeness coefficient (0.653499), AISA obtained the third rank with a closeness coefficient (0.604137), and among the rest, the last rank with an extremely low Closeness Coefficient value (0.000084), that is indicating the least successful of companies. The rank results of TOPSIS analysis-based ranking analysis clearly present the ranking performance of the company, and are used as references for subsequent decision making.

4. Conclusion

MLBI ranks highest (closing coefficient (C) of 0.703569) with the aid of results from the TOPSIS approach. This success demonstrates the superior performance of MLBI with respect to the three main financial indicators considered—Debt to Equity Ratio (DER), Return on Assets (ROA), and Price to Book Value (PBV). These findings highlight the degree to which, on the one hand, the company is living very close to the positive ideal solution (A+, the most optimal scenario, and, on the other hand, to the much greater distance from the negative ideal solution (A-, the worst-case scenario. The weight of the ranking goes far beyond numbers as it is an important driver of the strategic choice of the company and contributes to the bigger picture of economic development. Based on these findings, the business can pinpoint specific areas that need to be changed, improve its debt management, improve investment decisions and better direct resources. In addition, companies that have a high score from these evaluations are routinely construed as more trustworthy and beneficial, which thus enhances their image and builds greater trust among stakeholders.

Copyright:

References

[1] E. E. Supriyanto, "The Politics of Indonesia's Renewable Energy Policy," *Langgas: Jurnal Studi Pembangunan*, vol. 3, no. 1, pp. 12–18, Mar. 2024, doi: 10.32734/ljsp. v3i1.15540.

[2] N. D. Dat, N. Hoang, M. T. Huyen, D. T. N. Huy, and L. M. Lan, "Energy consumption and economic growth in Indonesia," *International Journal of Energy Economics and Policy*, vol. 10, no. 5, pp. 601–607, 2020, doi: 10.32479/ijeep.10243.

[3] B. Francis, I. Hasan, and Y. Zhu, "Diversification and the Economy: The Role of Government in Enhancing the Industrial Base," in *International Monetary Fund.*

[4] A. Anggraeni Puspitarini and B. Tati Fitria, "The Effect of Return on Assets (ROA) and Debt to Equity (DER) on Firm Value (Study of One of The Selected Bank Companies on the IDX)," 2023.

[5] F. Emerio Tanny and U. Pelita Harapan, "THE INFLUENCE OF EARNING PER SHARE, PRICE TO BOOK VALUE, RETURN ON ASSET AND RETURN ON EQUITY TOWARD STOCK PRICE ON BASIC INDUSTRY AND CHEMICALS COMPANY LISTED IN INDONESIA STOCK EXCHANGE," 2022.

[6] Z. H. Abd Rahim, N. Abdullah Fahami, F. W. Azhar, H. Abd Karim, and S. K. N. Abdul Rahim, "Application of TOPSIS Analysis Method in Financial Performance Evaluation: A Case Study of Construction Sector in Malaysia,"

ADVANCES IN BUSINESS RESEARCH INTERNATIONAL JOURNAL, vol. 6, no. 1, p. 11, May 2020, doi: 10.24191/abrij.v6i1.9934.

[7] Y. T. İç, B. Çelik, S. Kavak, and B. Baki, "An integrated AHP-modified VIKOR model for financial performance modeling in retail and wholesale trade companies," *Decision Analytics Journal*, vol. 3, Jun. 2022, doi: 10.1016/j.dajour.2022.100077.

[8] F. Dayi, A. Cilesiz, and M. Yucel, "Strategic Management of Clean Energy Investments: Financial Performance Insights by Using BWM-based VIKOR and TOPSIS Methods," *International Journal of Energy Economics and Policy*, vol. 14, no. 5, pp. 566–574, Sep. 2024, doi: 10.32479/ijeep.16705.

[9] K. Kara, G. C. Yalçın, A. Çetinkaya, V. Simic, and D. Pamucar, "A single-valued neutrosophic CIMAS-CRITIC-RBNAR decision support model for the financial performance analysis: A study of technology companies," *Socioecon Plann Sci*, vol. 92, Apr. 2024, doi: 10.1016/j.seps.2024.101851.

[10] I. Kefe, S. Evci, and I. Kefe, "Data on the financial performance of companies on BIST Sustainability 25 Index: An Entropy-based TOPSIS approach," Sep. 2024, doi: 10.17632/c6rwfjj5bt.2/

DOI: 10.55214/25768484.v8i6.3976