

The Role of Financial Performance in Mediating the Influence of Green Finance and Competitive Advantage on Company Value (Company Case Study Energy Sub-Sector in 2021-2023)

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Abstract

This study aims to determine the influence of green finance and competitive advantage on company value through financial performance as a mediating variable in energy sub-sector companies listed on the Indonesia Stock Exchange in 2021-2023. There were 13 companies with 39 observations that met the criteria as a research sample. This study uses Structural Equation Model analysis based on Partial Least Square (PLS). The results of this study show that, green finance has a negative and significant effect on company value, competitive advantage has a positive and insignificant effect on company value, green finance has a positive and significant effect on financial performance, competitive advantage has a negative and significant effect on financial performance, financial performance has a positive and significant effect on company value, financial performance mediates the influence of green finance on the company's value positively and significantly, and financial performance can mediate the influence of competitive advantage on the company's value negatively and significantly.

Keywords: Green Finance, Competitive Advantage, Financial Performance, Company Values

INTRODUCTION

The value of companies in Indonesia's industrial sector is increasingly dependent on the application of sustainability principles (Tiara & Jayanti, 2022). With the growing global demand for transparency and social compliance, companies in the Indonesian capital market are seeking to implement sustainability practices that not only meet market expectations but also create long-term benefits through innovation and operational excellence (Romadhoni et al., 2022). The value of a company, especially in exchange-listed companies,

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is often reflected in the share price, which is influenced by improved performance and effective management decisions, which in turn improves the welfare of shareholders (Lubis, 2016).

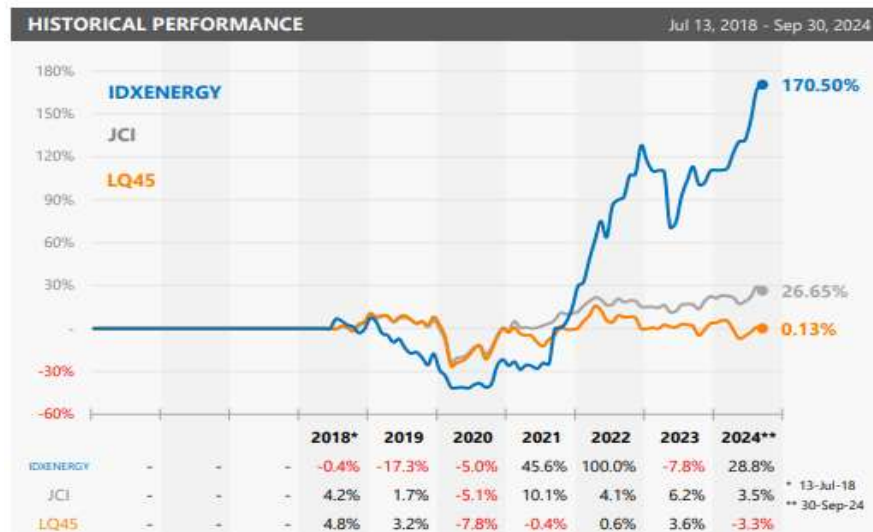


Figure 1. Historical chart of the performance of energy sub-sector stocks (IDXENERGY)

The historical graph of the performance of energy sub-sector stocks (IDXENERGY), which shows a significant growth of 170.50% from July 2018 to September 2024, surpassed the Composite Stock Price Index (JCI) which only grew 26.65% and the LQ45 which stagnated at 0.13%, indicating superior financial performance. However, in the era of globalization, the business sector, including energy, is now faced with pressure to pay attention to its contribution to environmental sustainability. The Indonesian government encourages the integration of the Sustainable Development Goals (SDGs) to create a balance between economic growth and environmental sustainability (Putri & Kusuma, 2024), which encourages the development of the concept of green finance in Indonesia.

Indonesia's low global green finance score and ranking indicate that the implementation of green finance is less than optimal. Jakarta dropped from 61st place in GGFI 12 (October 2023) to 65th place in GGFI 13 (April 2024), reflecting challenges in the development of green finance. Nonetheless, Indonesia has taken significant steps through the OJK with green bond regulations (POJK No. 60/2017) and the Indonesia Green Taxonomy 1.0 in 2022.

Centre	GGFI 13		GGFI 12		Change in	Change in
	Rank	Rating	Rank	Rating	Rank	Rating
Philadelphia	49	594	59	562	▲ 10	▲ 32
Guangzhou	50	593	55	566	▲ 5	▲ 27
Lisbon	51	592	51	570	0	▲ 22
Tel Aviv	52	591	42	579	▼ 10	▲ 12
Dublin	53	590	48	573	▼ 5	▲ 17
Rome	54	589	56	565	▲ 2	▲ 24
Helsinki	55	588	45	576	▼ 10	▲ 12
Santiago	56	587	65	551	▲ 9	▲ 36
Asana	57	586	53	568	▼ 4	▲ 18
Jersey	58	585	44	577	▼ 14	▲ 8
Miami	59	584	60	561	▲ 1	▲ 23
Doha	60	583	64	552	▲ 4	▲ 31
Isle of Man	61	582	57	564	▼ 4	▲ 18
Guernsey	62	581	58	563	▼ 4	▲ 18
Kuala Lumpur	63	580	62	558	▼ 1	▲ 22
Kaunas	64	578	New	New	New	New
Jakarta	65	577	61	560	▼ 4	▲ 17
GIFT City-Gujarat	66	576	54	567	▼ 12	▲ 9
Johannesburg	67	575	63	553	▼ 4	▲ 22
Sao Paulo	68	574	69	542	▲ 1	▲ 32
Manila	69	573	74	536	▲ 5	▲ 37
Prague	70	572	80	528	▲ 10	▲ 44
Riga	71	571	81	527	▲ 10	▲ 44
Bangkok	72	570	73	537	▲ 1	▲ 33
Rio de Janeiro	73	569	66	550	▼ 7	▲ 19
Malta	74	568	82	526	▲ 8	▲ 42
New Delhi	75	567	70	540	▼ 5	▲ 27

Figure 2. The Global Green Finance Index (GGFI) 13

Green finance supports companies in achieving sustainability through innovation, strengthening relationships with stakeholders, and sustainable investment allocation (Ziolo et al., 2023). Green finance also supports the achievement of the SDGs by mitigating the impact of climate change (Özbek, 2024). Several studies related to green finance show mixed results. Green finance has a positive impact on stock price volatility and company value (Siregar & Satria, 2023; Yulianti et al., 2024). However, it did not have a significant effect on some other studies (Aini et al., 2024; Putri & Kusuma, 2024).

Another factor that affects the value of a company is its competitive advantage. Competitive advantage describes a company's ability to create more value for its consumers (Susila et al., 2023). Competitive advantage is measured through economies of scale, capital requirements, power over suppliers and customers, and market share (Dickinson & Sommers, 2012). Research on competitive advantage shows mixed results. Some studies (Romadhoni et al., 2022; Susila et al., 2023; Wijayanto et al., 2019; Saputra & Nuzula, 2024) found that competitive advantage positively and significantly affects company value. However, other studies (Widayanto et al., 2023) shows that competitive advantage does not have a significant effect on the company's value. In addition, research Aska & Kurniasih (2022) found that competitive advantage measured by structure capital value added (STVA) hurts stock prices.

Financial performance is a mediator in the relationship between green finance, competitive advantage, and company value. Thus, financial performance is expected to provide

a clearer insight into the contribution of the two independent variables to the company's value. Previous studies have shown a link between green finance, competitive advantage, and financial performance, with varying results. Some research (Goeliling et al., 2023; Liu & Wu, 2023) It was found that green finance has a significant positive influence on financial performance. However, some studies show negative or insignificant impacts (Zhang & Zhang, 2023; Yeow & Ng, 2021). Studies on the relationship between competitive advantage and financial performance also yield mixed results. Some research (Muhangi et al., 2024; Jao et al., 2023) found significant positive influences, while other studies (Sigalas & Papadakis, 2022; Tan et al., 2022) show no significant influence.

Research on financial performance as a mediator in the relationship between green finance and corporate value is still limited. Some studies (Lichtenberger et al., 2022) show that green finance can improve financial performance, but other research (Alfikri & Susyani, 2022) found that profitability does not moderate the relationship. Furthermore, the role of financial performance in mediating the relationship between competitive advantage and company value is still rarely researched. Studi Mulyasari & Murwaningsari (2019) showing financial performance is influential as a mediator, while Subagio & Saraswati (2022) found that financial performance failed to mediate the relationship between enterprise risk management as a tool of competitive advantage and company value.

The energy sector was chosen as the object of research because of its strategic role in the Indonesian economy, as well as its challenges in the energy transition and rising energy prices after the Russia-Ukraine invasion. With significant growth in the energy sector, energy companies in Indonesia need to adopt sustainability strategies, including green finance, to face increasingly stringent regulations and investor expectations for green practices.

LITERATURE ANALYSIS AND METHODOLOGY

Literature Analysis

This study integrates key theoretical frameworks, including Signaling Theory, Stakeholder Theory, Legitimacy Theory, and Resource-Based View (RBV), to analyze the relationship between green finance, competitive advantage, financial performance, and corporate value. Signal Theory explains that companies with good financial performance give positive signals to the market and investors (Asaoka, 2022). Stakeholder Theory emphasizes the role of sustainability practices in meeting societal expectations, while Legitimacy Theory highlights the alignment of corporate actions with environmental norms to maintain public trust (Putri & Kusuma, 2024). RBV supports competitive advantage by stating that the company leverages unique resources to create value (Barney dalam Muhangi, et al., 2024).

Green finance is operationalized through three dimensions, namely the disclosure of the Green Bond Principle (Green Bond Principles/GBP), green investment, dan green innovation (ICMA, 2023; Liu et al., 2022; Wang & Ahmad, 2024). Green Bond Principles Implying the company's commitment to sustainable development, Green Investment indicates the amount of funds allocated for sustainable initiatives, while Green Innovation reflects technological advances in environmentally friendly processes and products.

Competitive advantage is measured through the proxy of economies of scale (Cost of Sales), capital intensity (Capital Intensity), power over suppliers (Inventory Turnover), customer bargaining power (Receivables Turnover), and market dominance (Dickinson & Sommers, 2012).

Financial performance acts as a mediating variable, which is measured through profitability ratios (ROA, ROE, ROI, OPM, NPM) to indicate operational efficiency and resource utilization (Brigham & Houston, 2019). The company's value is proxied by market-based metrics, Price-to-Book Value (PBV), Price-Earnings Ratio (PER), stock volatility (VHS), and Tobin's Q.

RESEARCH DESIGN

Data and Sample Selection

This study uses a quantitative approach to analyze the relationship between variables through statistics. From the population of 87 energy sub-sector companies on the Indonesia Stock Exchange for the 2021-2023 period, 13 companies were selected through purposive sampling. The data used is in the form of quantitative secondary data, such as annual reports, financial statements, and sustainability reports from the IDX's official website.

Measurement Model

Structural equation modeling (SEM) is a technique used to estimate the relationship between a construct and an indicator, taking into account measurement errors (Hair et al., 2021). This study uses the Smart PLS 4.0 application for multivariable analysis involving many indicators in one variable.

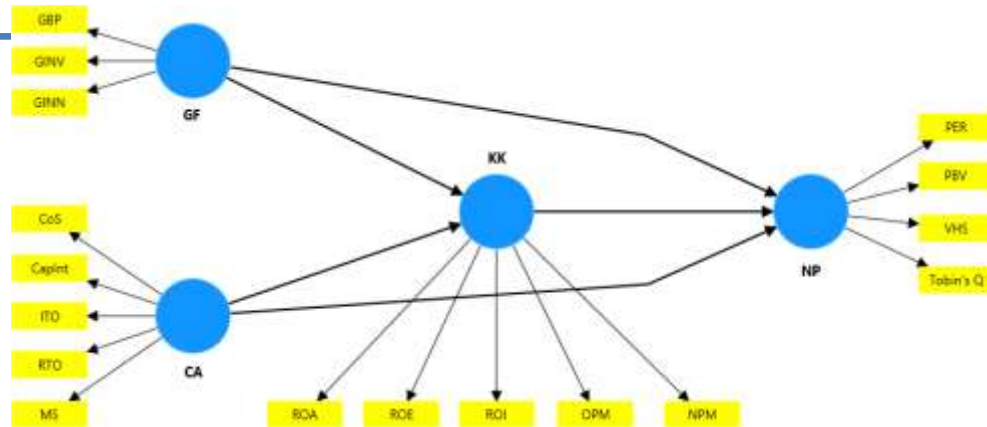


Figure 3. Initial Research Model

The measurement and assessment of variables and their indicators in this study are listed in the following table:

Variable	Indicator	Formula
Green Finance (X1)	Green Bond Principles (GBP)	$\text{GBP} = \frac{\text{Number of GBP indicators disclosed by the company}}{\text{Total Indicator GBP (51)}}$ Source: The International Capital Market Association (ICMA, 2023)
	Green Investment (GINV)	$\text{GINV} = \log \frac{\text{green investment}}{\frac{\text{total assets}}{1000}}$ Source: (Liu et al., 2022; Maharani et al., 2023)
	Green Innovation (GINN)	$\text{GINN} = \frac{\text{the number of GI items disclosed by the company}}{\text{Total Item Green Innovation (8)}}$ Source: (Wang & Ahmad, 2024; Xie et al., 2019)
Competitive Advantage (X2)	Cost of Sales (CoS)	$\text{CoS} = \frac{\text{Cost of Goods Sold}}{\text{Net Sales}}$ Source: (Dickinson & Sommers, 2012; Wijayanto et al., 2019)

	Capital Intensity (Capint)	$\text{CapInt} = \frac{\text{Depreciation Expense}}{\text{Net Sales}}$ Source: (Dickinson & Sommers, 2012; Wijayanto et al., 2019)
	Inventory Turnover (ITO)	$\text{ITO} = \frac{\text{Cost of Goods Sold}}{\text{Inventory}}$ Source: (Dickinson & Sommers, 2012; Wijayanto et al., 2019)
	Receivable Turnover (RTO)	$\text{RTO} = \frac{\text{Net Sales}}{\text{Receivables}}$ Source: (Dickinson & Sommers, 2019; Wijayanto et al., 2019)
	Market Share (MS)	$\text{MS} = \frac{\text{Sales Revenue}}{\text{Total overall industry revenue}}$ Source: (Dickinson & Sommers, 2012; Wijayanto et al., 2019)
Company Values (Y)	Price to Earning Ratio (PER)	$\text{PER} = \frac{\text{Price per share}}{\text{Earnings per share}}$ Source: (Brigham & Houston, 2019)
	Price to Book Value (PBV)	$\text{PBV} = \frac{\text{Market Price per Share}}{\text{Book Value per Share}}$ Source: (Brigham & Houston, 2019)
	Stock Price Volatility (VHS)	$\text{VHS} = \sqrt{\frac{\text{Hi.t} - \text{Li.t}}{\left(\frac{\text{Hi.t} + \text{Li.t}}{2}\right)^2}}$ Source: (Septyadi & Bwarleling, 2020)
	Tobin's Q	

Financial Performance (Z)		$\text{Tobin's Q} = \frac{\text{Total Market Value} + \text{Total Liabilities}}{\text{Total Assets}}$ Source: (Putri & Kusuma, 2024)
	Return on Asset (ROA)	$\text{ROA} = \frac{\text{Net Income}}{\text{Total Asset}}$ Source: (Brigham & Houston, 2019)
	Return on Equity (ROE)	$\text{ROE} = \frac{\text{Net Income}}{\text{Total Equity}}$ Source: (Brigham & Houston, 2019)
	Return on Investment (ROI)	$\text{ROI} = \frac{\text{Net Income}}{\text{Total Investment}}$ Source: (Patrocinio et al., 2024)
	Operating Profit Margin (OPM)	$\text{OPM} = \frac{\text{Earning Before Interest and Tax (EBIT)}}{\text{Sales}}$ Source: (Brigham & Houston, 2019)
	Net Profit Margin (NPM)	$\text{NPM} = \frac{\text{Net Income}}{\text{Sales}}$ Source: (Brigham & Houston, 2019)

RESEARCH AND RESULTS

Convergent Validity

Convergent validity measures the degree of strong association between indicators in a latent variable. This evaluation uses outer loadings, where a value of ≥ 0.70 is considered to meet the standard, indicating the contribution of the indicator to the latent construct (Hair et al., 2022). Based on these criteria, eight indicators with outer loadings < 0.70 were found that must be removed from the model. In the green finance variable, the Green Bond Principles (GBP) and Green Innovation indicators do not meet the standards. In the

competitive advantage variable, the indicators Capital Intensity (Capint), Inventory Turnover (ITO), Receivable Turnover (RTO), and Market Share are also issued. Meanwhile, on the dependent variable of Company Value, the Price Earnings Ratio (PER) and Stock Price Volatility (VHS) indicators must be removed. For the Financial Performance mediation variable, the Operating Profit Margin (OPM) and Net Profit Margin (NPM) indicators also did not meet the criteria. After the removal of the indicator, here is a new model formed:

In addition to evaluating the value of outer loadings, the validity of convergence also considers Average Variance Extracted (AVE). AVE describes the extent to which the variance of an indicator can be explained by a latent variable. The threshold value for AVE is set at ≥ 0.50 , which indicates that more than half of the indicator's variance is successfully explained by latent constructs. The following is a discussion of the AVE value:

Table 2. Result of Average Variance Extracted (AVE) value

Variable	Average Variance Extracted (AVE) Value
Green Finance	1.000
Competitive Advantage	1.000
Financial Performance	0.838
Company Values	0.991

Based on Table 2, the AVE values for the green finance and competitive advantage variables are 1,000, financial performance 0.838, and company value 0.991, respectively. All of these values exceed the minimum threshold ≥ 0.50 , indicating that the variance of the indicator has been adequately explained by the latent variable. Thus, the validity of convergence in this study has been fulfilled.

Validity of Discrimination and Reliability

This study uses the HTMT ratio as a representative of convergence validity. This is because the Heterotrait-Monotrait Ratio of Correlations (HTMT) is the most relevant ratio used to assess the validity of discrimination in reflective measurement models. The ideal threshold for HTMT is ≤ 0.90 (Avkiran & Ringle, 2018).

Table 3. HTMT result

	Green Finance	Competitive Advantage	Financial Performance	Company Values
Green Finance				

Competitive Advantage	0.271			
Financial Performance	0.500	0.618		
Company Values	0.168	0.427	0.814	

Based on Table 4, the HTMT value for each construct < 0.90, indicating the absence of a discrimination validity issue. This indicates that the constructs in this study are well separated and meet the requirements of the validity of the discrimination.

Inner Model

This study uses the R-Square test as an assessment of the structural model. The R Square test is a measurement criterion to determine how much exogenous variables can explain endogenous variables in a model (Duryadi, 2021).

Table 4. R Square (R²) Test

	R-square	R-square adjusted
Financial Performance	0.463	0.433
Company Values	0.643	0.612

Table 4 shows the R Square value of Financial Performance of 0.463, meaning that 46.3% of the variance of Financial Performance is explained by green finance and competitive advantage, while 53.7% is influenced by other factors. Meanwhile, the R Square of the Company Value of 0.643 shows that 64.3% of the variance is influenced by green finance, competitive advantage, and financial performance, the remaining 35.7% is by other factors outside the model.

Hypothesis Testing

Hypothesis testing on PLS was carried out by path coefficient analysis. The path coefficient measures the strength and direction of the relationship between latent variables in a structural model. Significance is tested through bootstrapping using t-statistic and p-value. With a significance level of 0.05, the t-statistic > 1.96 and the p-value < 0.05 showed significant results, so the null hypothesis was rejected. The value of the original sample determines the direction of the relationship, positive or negative (Duryadi, 2021).

Table 5. Direct Effects Path Coefficient Results

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Conclusion
GF → NP	-0.261	-0.263	0.079	3.286	0.001	Accepted
CA → NP	0.054	0.061	0.119	0.456	0.649	Rejected
GF → KK	0.343	0.339	0.111	3.093	0.003	Accepted
CA → KK	-0.502	-0.501	0.107	4.716	0.000	Accepted
KK → NP	0.925	0.949	0.105	8.795	0.000	Accepted

To analyze the effect of financial performance mediation in the relationship between the variables studied, it is necessary to observe the indirect effects pathway coefficient. The following is a table containing the values of indirect effects for this study:

Table 6. Results of the Path Coefficient of Specific Indirect Effects

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Conclusion
GF → KK → NP	0.317	0.319	0.106	2.985	0.004	Accepted
CA → KK → NP	-0.464	-0.478	0.128	3.633	0.000	Accepted

DISCUSSION

The Influence of Green Finance on Company Value

The results of the first hypothesis test show that green finance has a negative and significant effect on the value of companies in the energy sub-sector during 2021–2023, with a t-statistic of 3.286 and a p-value of 0.000. This supports the theory of legitimacy, which states that eco-friendly activities aim to gain public legitimacy, even though the impact on the company's value may be negative in the short term.

These findings are in line with research Xie et al. (2022), which found that green innovation in the energy sector can reduce financial flexibility due to the allocation of large power sources for green innovation, so the market sees it as an additional burden. However, these results differ from research Putri dan Kusuma (2023) also Tiara dan Jayanti (2022), which found that green finance is not significant to the company's value. Although green finance is considered a long-term investment opportunity, initial investment is often seen as a burden in the short term, hurting the company's value.

The Effect of *Competitive Advantage* on Company Value

The results of the second hypothesis test show that competitive advantage has a positive but not significant influence on the value of companies in the energy sub-sector during 2021–2023, with a t-statistic of 0.456 and a p-value of 0.649. This shows that the competitive advantage strategy has not been reflected in the increase in company value.

According to the Resource-Based View (RBV) theory, competitive advantage can increase a company's value through unique and hard-to-replicate power sources. However, market homogeneity in the energy sector, such as similar coal products, hinders the implementation of product differentiation strategies as stated by Porter regarding the type of competitive advantage. These results are consistent with research Widayanto et al. (2023), which shows that inventory turnover as a proxy for competitive advantage is not significant to the company's value. However, these findings differ from the research Wijayanto et al. (2019) dan Saputra & Nuzula (2024), which states that competitive advantage has a significant influence. These differences are likely due to sample characteristics, additional variables, or different research time frames.

The Influence of *Green Finance* on Financial Performance

The results of the third hypothesis test show that green finance has a positive and significant influence on the financial performance of companies in the energy sub-sector during 2021–2023, with a t-statistic of 3.093 and a p-value of 0.003. These findings support the stakeholder theory, which states that attention to sustainability attracts investors, increases consumer confidence, and strengthens relationships with governments, thus supporting the company's financial performance (Goeliling et al., 2023).

Studi Liu dan Wu (2023) also emphasized that green finance reduces environmental risks, attracts capital market support, and receives government incentives, such as subsidies and green procurement, which strengthen access to capital and encourage sustainable innovation. However, this study is not in line with Yeow and Ng (2021) which found green bonds to be insignificant to financial performance, and Zhang and Zhang (2023) noted the negative impact of green finance on the profitability of commercial banks in China.

The Effect of *Competitive Advantage* on Financial Performance

The results of the fourth hypothesis test show that *competitive advantage* has a negative and significant influence on the financial performance of companies in the energy sub-sector during 2021–2023, with a t-statistic of 4.716 and a p-value of 0.000. While *competitive advantage* can create unique value that increases long-term revenue (Jao et al., 2023), The results of this study show a negative impact in the short term.

Competitive advantage strategies in the energy sector, such as investments in renewable energy technologies, require large costs that squeeze profit margins, cash flow, and profitability ratios during the research period. This explains the negative impact on financial performance. These findings are different from the studies Sigalas & Papadakis (2022) and Tan et al. (2022), which state that competitive advantage is not significant to financial performance.

The Effect of Financial Performance on Company Value

The results of the fifth hypothesis test show that financial performance has a positive and significant effect on the value of companies in the energy sub-sector during 2021–2023, with a *t-statistic* of 8.795 and a *p-value* of 0.000. These findings support the signal theory, which states that good financial performance gives positive signals to markets and investors, increasing their confidence in the company's value.

This research is consistent with Keter et al. (2024) which states that strong financial performance reflects the company's ability to generate profits, manage assets, and increase investor confidence, thereby supporting business objectives and dividend distribution. However, these results are different from the findings Ismanto (2023) which states that financial performance does not have a significant effect on the company's value.

The Influence of *Green Finance* on Company Value through Financial Performance

The results of the sixth hypothesis test show that green finance has a positive and significant effect on the company's value through financial performance mediation, with a *t-statistic* of 2.985 and a *p-value* of 0.004. These findings confirm that energy sub-sector companies that adopted green finance during 2021–2023 had a positive impact on corporate value through financial performance. These results are in line with the study by Lichtenberger et al. (2022), which states that green financing, such as green bonds, has a positive social impact, and long-term stability, and is attractive to investors because of its lower risk and resilience to market fluctuations. However, this finding is different from Alfikri & Susyani (2024), which concludes that profitability does not moderate the relationship between green finance and corporate value.

The Effect of Competitive Advantage on Company Value through Financial Performance

The results of the seventh hypothesis test show that competitive advantage has a negative and significant effect on the company's value through financial performance mediation, with a *t-statistic* of 3.633 and a *p-value* of 0.000. These findings confirm that

companies in the energy sub-sector during 2021–2023 that implemented competitive advantage strategies through financial performance showed a negative impact on company value. These results support the study Mulyasari & Murwaningsari (2019), which states that financial performance can mediate the relationship of competitive advantage to company value because this strategy improves operational efficiency and sustainable profits. However, these findings contradict research Subagio & Saraswati (2022), which concludes that financial performance does not mediate the relationship between enterprise risk management as a tool for competitive advantage and company value.

CONCLUSION AND RECOMMENDATIONS

This study analyzes the influence of green finance and competitive advantage on the value of companies with financial performance as mediation, using data from 13 energy sub-sector companies listed on the IDX for the 2021–2023 period. Based on the results of the analysis, it can be concluded that green finance has a negative and significant effect on the company's value but has a positive and significant effect on financial performance, which ultimately has a positive and significant impact on the company's value through improving financial performance. On the other hand, competitive advantage does not have a significant effect on the company's value directly but has a negative and significant effect on financial performance, which then has a negative and significant impact on the company's value through financial performance. These findings show that financial performance plays a crucial role in increasing company value, while the implementation of green finance and competitive advantage strategies has a complex and layered impact on company value.

Researchers are further advised to expand the scope of the research by increasing the period to a decade and exploring green finance variables, competitive advantage, and green product innovation indicators in different sub-sectors such as food and beverages or basic materials, especially related to environmentally friendly packaging, and testing competitive advantages in a more heterogeneous market. Companies are advised to pay close attention to the implementation of green finance, re-evaluate their competitive advantage strategies, and focus on improving financial performance as well as transparency of annual reports and sustainability. The government is expected to adopt special standards to regulate green finance to support the SDGs in Indonesia. Meanwhile, investors are advised to conduct independent research, consider regulatory, external, and sustainability factors, and pay attention to risks and opportunities in related sub-sectors before making investment decisions.

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