



FIRM SIZE, COST OF CAPITAL, AND FIRM PERFORMANCE: THE MEDIATING ROLE OF OPERATIONAL EFFICIENCY IN NON-FINANCIAL COMPANIES LISTED ON IDX

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ABSTRACT

This research aims to investigate the complex interplay between organizational scale, financing costs, and corporate outcomes through the lens of internal productivity. The study examines the influence of firm size and cost of capital on firm performance, specifically analyzing the mediating role of operational efficiency within non-financial companies listed on the Indonesia Stock Exchange (IDX) between 2022 and 2024.

Employing a quantitative approach, the investigation utilizes a purposive sampling method to select 61 companies, resulting in 183 observations over the three-year period. Data analysis is conducted using path analysis through the *Fixed Effect Model (FEM)*, determined as the most appropriate estimation method after rigorous diagnostic testing, including the *Chow* and *Hausman* tests.

The empirical findings indicate that firm size exerts a significant positive impact on firm performance, suggesting that larger enterprises benefit from superior resource configurations and economies of scale. However, the study reveals that cost of capital does not significantly affect operational efficiency. Furthermore, operational efficiency is found to have a negligible impact on firm performance within this specific temporal and industrial framework. Consequently, the results demonstrate that operational efficiency fails to act as a mediating variable between financial inputs and corporate performance. These findings highlight that for non-financial firms in Indonesia, market valuation as measured by *Tobin's Q* is driven more directly by asset scale than by the optimization of internal operational ratios.

Keywords: firm performance, firm size, cost of capital, operational efficiency, *tobin's q*.

INTRODUCTION

Indonesian non-financial companies have faced increasingly intense competition in the post-pandemic period. Recovery in domestic demand, shifts in consumer behavior, tighter monetary policy, and changing investment preferences have required firms to become more adaptive in managing their strategic resources. Differences in company scale and financing capacity create unequal opportunities among firms, where larger entities often possess broader access to assets, funding, and market networks. Firm performance therefore becomes an important indicator because it reflects how effectively management converts available resources into profitability, operational stability, and sustainable growth under changing economic conditions (Farida & Setiawan, 2022). The recent profitability trend shows that non-financial firms experienced gradual improvement during 2022–2024. Average *Return on Assets (ROA)* increased from 4.8% in 2022 to 5.2% in 2023 and was projected to reach 5.5% in 2024. Average *Return on Equity (ROE)* also rose from 8.9% in 2022 to 9.7% in 2023 before reaching 10.2% in 2024. These figures indicate that many firms were able to restore earnings capacity after earlier economic disruptions. Stronger profitability also suggests improvements in cost management, asset utilization, and revenue generation, although the pace of recovery likely varied across sectors and firm categories (IDX, 2024).

Financing conditions remained relatively challenging throughout the same period. Lending rates were recorded at 9.15% in 2022, increased to 9.25% in 2023, and only slightly declined to 9.20% in 2024. Such levels indicate that the cost of external funding remained high for many corporations. Expensive capital can reduce investment appetite, raise debt-servicing burdens, and limit expansion plans, particularly for firms that depend heavily on borrowed funds. The persistence of profitability growth despite these financing pressures suggests that some firms were able to offset higher costs through stronger internal management and more efficient operations (Focus, 2025). The structure of the Indonesian capital market also became more competitive as the number of listed non-

financial firms continued to rise. The population increased from 725 companies in 2022 to 797 in 2023 and reached 839 in 2024. This expansion reflects growing corporate participation in public markets and stronger investor interest in non-financial sectors such as manufacturing, consumer goods, technology, property, and infrastructure. A larger number of competitors means firms must compete more aggressively for market share, capital access, and operational efficiency advantages. Companies that fail to adapt may face weaker profitability and declining market value (Ferdinand & Soebarkah, 2025).

Previous studies on firm performance have largely focused on external determinants such as *Environmental, Social, and Governance (ESG)* practices, governance quality, macroeconomic conditions, innovation, and intellectual capital. These variables are often considered important because they influence investor perception, risk exposure, and long-term competitiveness. Structural variables such as *firm size* and *cost of capital*, however, have frequently been positioned only as control variables rather than core explanatory factors. This tendency leaves limited understanding of how internal scale advantages and financing conditions directly shape corporate outcomes, especially in emerging markets (Marashdeh et al., 2021). Empirical findings regarding firm size and cost of capital also remain inconsistent. Some studies report that larger firms enjoy stronger performance because they benefit from economies of scale, broader bargaining power, and easier access to funding. Other studies find that large firms may suffer from bureaucratic complexity, coordination inefficiency, and slower decision-making. Similar inconsistencies appear in the cost of capital literature, where lower financing costs may support investment growth in some firms but fail to improve outcomes in others. These mixed results indicate that direct relationships alone may not fully explain variations in performance (Ahmad et al., 2022).

Operational efficiency is proposed as the key mechanism that links structural advantages to actual performance. Large firms or firms with lower financing costs do not automatically generate superior results unless their resources are managed productively. Efficient asset utilization, disciplined cost control, smooth production processes, and effective managerial coordination are necessary for transforming resources into higher profitability and stronger firm value. Firms with similar size and financing profiles may therefore achieve very different outcomes depending on the quality of their internal operations (Bhatia et al., 2024). This study focuses on non-financial companies listed on the Indonesia Stock Exchange during 2022–2024 because these firms rely heavily on physical assets, production processes, supply chain management, and capital allocation decisions. Such characteristics make them suitable for evaluating how firm size and cost of capital influence performance through operational efficiency. The research seeks to provide a more integrated explanation of firm performance by examining whether operational efficiency functions as a mediating variable between structural resources, financing conditions, and corporate outcomes in Indonesia (F. Ahmed et al., 2024).

THEORETICAL FRAMEWORK AND FORMULATION OF HYPOTHESES

Resource-Based View

Resource-Based View explains that a company is a collection of resources and capabilities that can create competitive advantage when managed effectively. Firm size reflects accumulated assets, organizational routines, managerial systems, and operational capacity developed over time. Larger firms may gain benefits through economies of scale, stronger bargaining power, and broader market access. These advantages do not automatically produce superior performance because expansion may also create coordination problems, structural rigidity, and managerial inefficiency. Operational efficiency becomes the key mechanism that determines whether available resources are transformed into productive outcomes and stronger firm performance. This theory therefore supports the view that firm size can influence performance directly and indirectly through internal efficiency (Hu et al., 2022).

Corporate Finance Theory

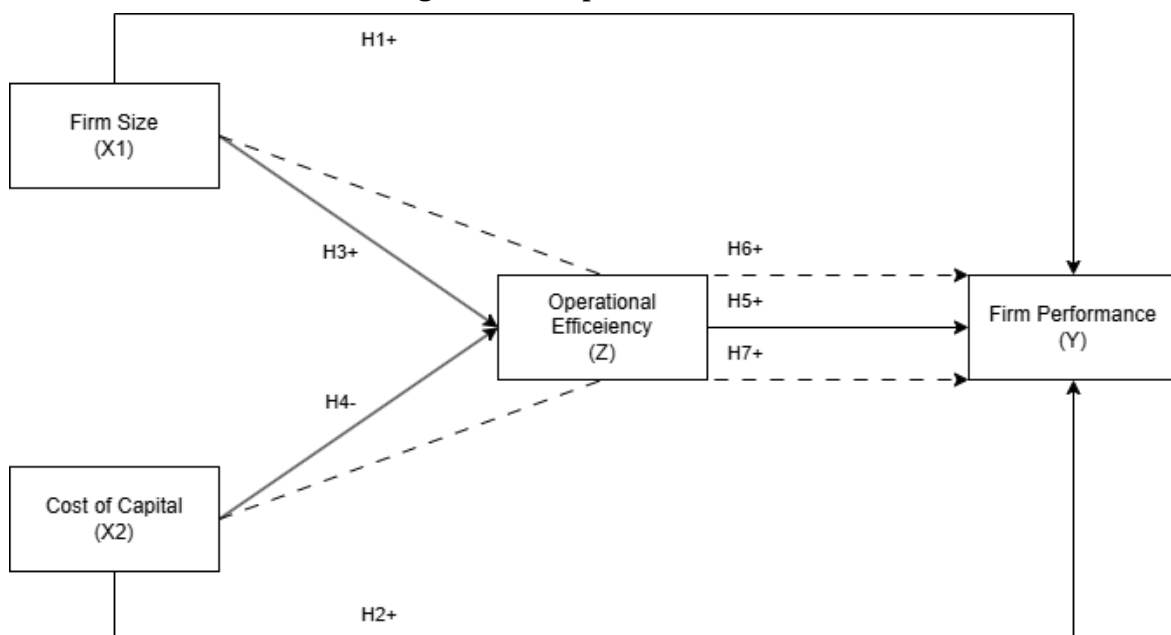
Corporate Finance Theory explains how firms make investment, financing, and capital structure decisions with the objective of maximizing firm value. The theory emphasizes that the cost of capital represents the minimum return expected by creditors and shareholders. Lower financing costs allow firms to invest in profitable projects, expand operations, and improve long-term growth.

Higher financing costs increase financial pressure, reduce flexibility, and limit productive investment opportunities. Financial decisions also affect internal operations because efficient capital allocation can support technology adoption, cost control, and asset utilization. Poor financing choices may weaken efficiency and reduce firm performance. This theory therefore provides a foundation for understanding how the cost of capital affects firm performance directly and through operational efficiency (Javaid et al., 2023).

Conceptual Model

This study is grounded in the Resource-Based View and corporate finance theory to explain how structural firm characteristics are transformed into performance outcomes through internal organizational mechanisms. The proposed conceptual framework integrates Firm Size and Cost of Capital as structural antecedents, Operational Efficiency as an internal conversion capability, and Firm Performance as the outcome variable. The framework also incorporates control variables to account for ual heterogeneity that may Influence firm performance.

Figure 1 Conceptual Frameowrk



Hypothesis

Relationship between Firm Size and Firm Performance

Firm Size reflects the scale of a company's resources, including physical assets, financial capacity, organizational systems, and managerial capability. Larger firms generally possess wider access to financing, stronger bargaining power, and more established operational structures, enabling them to respond to competition and economic uncertainty more effectively than smaller firms. These advantages may create economies of scale, reduce average operating costs, improve asset utilization, and enhance overall firm performance. Within the *Resource-Based View*, firm size represents accumulated strategic resources that can create competitive advantage when managed efficiently (Abukari et al., 2024). Previous studies mostly support a positive relationship between firm size and firm performance, indicating that larger firms often benefit from stronger productivity and higher market valuation. Some studies also note that excessive expansion may create bureaucratic inefficiency, coordination problems, and diminishing returns, meaning that size does not always guarantee better outcomes. In the Indonesian non-financial sector, company scale remains an important factor influencing competitiveness and resilience. Based on these theoretical and empirical considerations, the proposed hypothesis is:

H1: *Firm Size* has a positive effect on *Firm Performance*.

Relationship between Cost of Capital and Firm Performance

Cost of Capital refers to the minimum return that a firm must generate to satisfy creditors and shareholders. A higher cost of capital increases financing burdens, reduces financial flexibility, and limits the firm's ability to invest in profitable projects or operational expansion. Lower financing costs provide greater room for growth, stronger liquidity, and improved resource allocation. In finance theory, the cost of capital functions as a benchmark in investment decisions, where only projects exceeding the required return are considered feasible. Rising capital costs therefore tend to reduce investment opportunities and weaken company performance (Javaid et al., 2023). Previous studies generally support a negative relationship between cost of capital and firm performance, showing that firms with lower financing costs often achieve better profitability and market outcomes. Excessive financing costs may also increase distress risk and suppress growth potential, especially in emerging markets. This issue is highly relevant in Indonesia, where non-financial firms face relatively high interest rates compared with several ASEAN peers, making affordable funding an important factor for competitiveness. Based on these theoretical and empirical arguments, the proposed hypothesis is:

H2: *Cost of Capital* has a negative effect on *Firm Performance*.

Relationship between Firm Size and Operational Efficiency

Firm Size reflects the scale of a company's operations and its ability to utilize physical, financial, and organizational resources. Larger firms usually have broader production capacity, better technology, skilled labor, and more standardized procedures. These advantages allow firms to spread fixed costs across larger output volumes, improve coordination, reduce idle capacity, and optimize asset utilization. From the perspective of operations management and the *Resource-Based View*, larger firms also have stronger capacity to develop internal systems and routines that support higher operational efficiency (Kweh et al., 2025). Previous studies generally indicate that larger firms tend to achieve stronger operational efficiency because they can invest in automation, information systems, and tighter cost control. Stronger internal structures also help firms manage supply chains and production processes more effectively. Excessive growth, however, may create bureaucracy, coordination problems, and slower decision-making, meaning that scale benefits are not always linear. In Indonesian non-financial firms, where efficiency remains an important challenge, company size may become a key foundation for operational improvement. Based on these arguments, the proposed hypothesis is:

H3: *Firm Size* has a positive effect on *Operational Efficiency*.

Relationship between Cost of Capital and Operational Efficiency

Cost of Capital represents the minimum return required by providers of funds and influences a firm's ability to finance operational activities. Lower financing costs reduce financial burdens and give firms greater flexibility to invest in automation, equipment renewal, information systems, and employee development. These investments are essential for improving productivity, reducing waste, and strengthening operational efficiency. High capital costs, in contrast, often force firms to prioritize liquidity and debt obligations rather than long-term operational improvements. From financial flexibility theory and the *Resource-Based View*, affordable capital becomes an important enabler for building internal efficiency capabilities (Javaid et al., 2023). Previous studies generally show that firms with lower financing costs tend to achieve better operational efficiency because they can maintain investment in productive assets and process optimization. Excessive leverage or expensive funding may weaken efficiency by increasing financial pressure and delaying maintenance or technology upgrades. This issue is especially relevant in Indonesia, where many non-financial firms operate in capital-intensive sectors and remain sensitive to interest rate movements. Under these conditions, financing costs become an important factor shaping productivity outcomes. Based on these arguments, the proposed hypothesis is:

H4: *Cost of Capital* has a negative effect on *Operational Efficiency*.

Relationship between Operational Efficiency and Firm Performance

Operational Efficiency reflects a firm's ability to convert assets, labor, and operating expenses into valuable output at the lowest possible cost while maintaining quality. Efficient firms are able to minimize waste, optimize asset utilization, and control expenses, which can improve profitability and financial stability. From operations strategy theory, efficiency is a key mechanism for achieving cost leadership and stronger competitive performance. Within the *Resource-Based View*, operational efficiency can also be seen as an internal capability that transforms company resources into sustainable advantage (Hu et al., 2022). Previous studies consistently indicate that higher operational efficiency leads to better firm performance through stronger margins, higher returns, and improved growth capacity. Efficient supply chain management, productive resource deployment, and disciplined cost control have been shown to support superior outcomes, especially in non-financial industries that depend heavily on asset utilization. Firms operating closer to the efficiency frontier are generally more competitive and resilient over time. Based on these theoretical and empirical arguments, the proposed hypothesis is:

H5: *Operational Efficiency* has a positive effect on *Firm Performance*.

Mediating Role of Operational Efficiency in the Influence of Firm Size on Firm Performance

Firm Size provides companies with broader resources such as physical assets, financial capacity, human capital, and technological infrastructure. Larger firms are generally more capable of spreading fixed costs, standardizing processes, and improving asset utilization. These advantages, however, do not automatically lead to superior firm performance because outcomes depend on how effectively resources are transformed into productive activities. In the *Resource-Based View*, *Operational Efficiency* functions as an internal capability that enables firms to organize and deploy their resources in a value-creating manner (Tripathi et al., 2025). Previous studies indicate that larger firms often achieve stronger performance through better supply chain management, working capital control, and efficiency-oriented systems. This evidence suggests that company scale may improve performance indirectly by first increasing operational efficiency. A direct effect of firm size may still remain through market power and financing access, yet efficiency is expected to explain an important portion of the relationship. Based on these theoretical and empirical arguments, the proposed hypothesis is:

H6: *Operational Efficiency* mediates the relationship between *Firm Size* and *Firm Performance*.

Mediating Role of Operational Efficiency in the Influence of Cost of Capital on Firm Performance

Cost of Capital represents the minimum return required by providers of funds and strongly influences a firm's financial flexibility. Higher capital costs increase financing burdens and reduce available funds for productivity-enhancing investments such as automation, technology upgrades, training, and process redesign. Lower financing costs allow firms to allocate resources more effectively toward operational improvements. Based on *Financial Constraints Theory* and the *Resource-Based View*, financing conditions may affect firm performance not only directly, but also indirectly through their impact on *Operational Efficiency* (Muhammad, 2025). Previous studies suggest that firms with lower financing costs are more capable of optimizing internal processes and sustaining productive operations, while excessive leverage and expensive funding often weaken efficiency and profitability. This pattern indicates that operational efficiency may serve as the transmission mechanism linking financing conditions to performance outcomes. When firms gain access to cheaper capital, they are more able to invest in efficient systems that ultimately improve firm performance. Based on these theoretical and empirical arguments, the proposed hypothesis is:

H7: *Operational Efficiency* mediates the relationship between *Cost of Capital* and *Firm Performance*.

RESEARCH METHODOLOGY

Population and Sample

The population of this study consists of all non-financial companies listed on the Indonesia Stock Exchange during 2022–2024. These firms were selected because their business performance

is closely related to asset utilization, production activities, and cost control, making them appropriate for examining the role of operational efficiency as an internal mechanism. Publicly listed companies also provide standardized and transparent financial reports, which improve data reliability. The observation period represents the post-pandemic recovery phase, when firms faced financing pressure and increasing demands for efficiency. The sample was determined using *purposive sampling* based on the following inclusion criteria:

1. Non-financial companies listed on the Indonesia Stock Exchange during the 2022–2024 period.
2. Companies that publish complete annual financial statements for each year of observation.
3. Companies that provide sufficient data to calculate Total Assets, Net Sales, Debt, Equity, and market value as proxies for the research variables.
4. Companies that do not experience delisting, prolonged trading suspension, or incomplete reporting during the study period.

Companies that did not meet these criteria were excluded from the sample. Based on the screening process, the final sample consists of firms considered appropriate for analyzing the relationship among *Firm Size*, *Cost of Capital*, *Operational Efficiency*, and *Firm Performance*.

Research Variables and Operational Definition of Variables

The research variables in this study consist of dependent, independent, and mediating variables that are aligned with the proposed conceptual framework. Each variable is defined operationally to ensure clear measurement, objective analysis, and consistency in empirical testing. The following table presents the variables, their operational definitions, measurement proxies, and formulas used in this study.

Table 1
Research Variables and Operational Definition of Variables

No	Variable	Type	Operational Definition	Measurement / Proxy
1	Firm Performance	Dependent	Reflects the company's ability to generate economic value through effective resource utilization and managerial decisions.	Tobin's Q
2	Firm Size	Independent	Reflects the scale of company operations and the amount of economic resources controlled by management.	Natural Log of Total Assets
3	Cost of Capital	Independent	Reflects the minimum return required by creditors and shareholders as compensation for investment risk.	Weighted Average Cost of Capital (WACC)
4	Operational Efficiency	Mediating	Reflects the firm's ability to utilize total assets productively to generate revenue and minimize waste.	Total Asset Turnover (TATO)

Type, Source, and Data Collection Method

This study uses a quantitative research approach with secondary data to examine the relationships among *Firm Size*, *Cost of Capital*, *Operational Efficiency*, and *Firm Performance*. A quantitative method was selected because it allows objective hypothesis testing through statistical analysis and provides conclusions based on measurable numerical evidence. Secondary data were chosen because they offer reliable historical financial information that is appropriate for evaluating corporate performance and financial conditions. The data were obtained from credible and publicly accessible sources, including the official website of the Indonesia Stock Exchange (*IDX*), company annual reports, audited financial statements, and recognized financial information platforms. The collected information includes total assets, net sales, total debt, equity, stock prices, and outstanding shares. These data were used to calculate all research variables for non-financial companies listed on

the Indonesia Stock Exchange during the 2022–2024 period. Data collection was conducted using the documentation method by gathering historical financial reports and supporting market information from official sources. The process included collecting annual reports, statements of financial position, income statements, and notes to financial statements. This procedure ensures that the data used in the analysis are transparent, standardized, verifiable, and academically reliable. The collected dataset provides the quantitative information required to measure *Firm Size*, *Cost of Capital*, *Operational Efficiency*, and *Firm Performance*.

RESULT AND DISCUSSION

Description of Research Object

This study focuses on non-financial companies listed on the Indonesia Stock Exchange during 2022–2024. These firms were selected because their performance is closely related to operational activities, asset utilization, and financing decisions. Based on *purposive sampling*, the final sample consists of 183 firm-year observations.

Table 2
Criteria and Sample of Research

No	Criteria	2022	2023	2024	Total
1	Non-financial companies listed on the Indonesia Stock Exchange (IDX) during the 2022–2024 period.	725	797	839	2,361
2	Companies that publish complete annual financial statements for each year of the observation period.	(690)	(752)	(790)	2,232
3	Companies that provide sufficient data to calculate Total Assets, Net Sales, Debt, Equity, and market value	(648)	(701)	(736)	2,085
4	Companies that do not experience delisting, trading suspension, or incomplete reporting during the study period.	(130)	(128)	(132)	390
5	Companies that do not meet the established criteria or lack a complete dataset for the 2022–2024 period.	(69)	(67)	(71)	207
Total		61	61	61	183

The sample selection was conducted using *purposive sampling* based on predetermined criteria. The initial population consisted of 2,361 non-financial company observations listed on the Indonesia Stock Exchange during 2022–2024. After excluding firms with incomplete financial statements, insufficient variable data, delisting or trading suspension status, and incomplete datasets, the final sample consisted of 61 companies each year. As a result, the total observations used in this study reached 183 firm-year observations.

Sub-Structural Path Analysis I

The selection of the regression model for Sub-Structural II involves a two-stage testing procedure to determine whether a Pooled Least Square, Fixed Effect, or Random Effect approach provides the most consistent results.

Table 3
Model Selection Test Results (Sub-Structural I)

Test Type	Statistic Value	Probability	Remark
Chow Test	24.3714	0.0000	Fixed Effect Model Selected
Hausman Test	11.7784	0.0082	Fixed Effect Model Selected

The panel data model selection results indicate that the *Fixed Effect Model* is the most appropriate estimation method for this study. The Chow Test produces a statistic value of 24.3714 with a probability of 0.0000, indicating that the *Fixed Effect Model* is preferable to the *Pooled Least Square Model*. The Hausman Test also shows a statistic value of 11.7784 with a probability of 0.0082, confirming that the *Fixed Effect Model* is more suitable than the *Random Effect Model*. These results indicate that the model is able to control individual differences among companies during the observation period.

Classical Assumption Sub-Structural I

The classical assumption test results indicate that the regression model fulfills the required assumptions.

Table 4
Heteroscedasticity Test Substructural I

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.626628	3.505558	-1.034537	0.3030
FS	0.120378	0.111444	1.080159	0.2823
CoC	-0.816152	0.443848	-1.838811	0.0684
OE	0.196483	0.159806	1.229507	0.2213

The heteroscedasticity test shows probability values of 0.2823 for *Firm Size*, 0.0684 for *Cost of Capital*, and 0.2213 for *Operational Efficiency*. All values are above 0.05, indicating that the residual variance is homoscedastic and free from heteroscedasticity problems.

Table 5
Multicollinearity Test Substructural I

	FP	FS	CoC	OE
FP	1.000000	-0.363148	-0.202330	0.393911
FS	-0.363148	1.000000	0.054775	-0.225137
CoC	-0.202330	0.054775	1.000000	-0.147193
OE	0.393911	-0.225137	-0.147193	1.000000

The multicollinearity test also shows no serious correlation among independent variables, where the highest correlation value is only 0.2251, far below the threshold of 0.80. These findings confirm that the regression model is statistically reliable for further hypothesis testing.

Hypothesis Test (Substructural I)

Hypothesis testing is conducted to examine the direct and simultaneous effects of *Firm Size*, *Cost of Capital*, and *Operational Efficiency* on *Firm Performance*. This stage also evaluates the explanatory power of the regression model through partial tests, simultaneous tests, and the coefficient of determination. The results of hypothesis testing are presented in the following table.

Table 6
Hypothesis Testing Substructural I

Test	Indicator	Result	Conclusion
t-Test	FS = -1.1353 (0.0000)	Significant negative	Accepted
t-Test	CoC = 0.3151 (0.7601)	Not significant	Rejected
t-Test	OE = 0.0064 (0.9861)	Not significant	Rejected
F-Test	31.7579 (0.0000)	Significant simultaneously	Accepted
Adjusted R ²	0.9141	91.41% explanatory power	Strong model

The hypothesis testing results show that *Firm Size* has a significant negative effect on *Firm Performance* with a coefficient of -1.1353 and a probability value of 0.0000. This finding indicates that larger firms tend to experience lower performance levels. *Cost of Capital* has a positive coefficient of 0.3151 with a probability of 0.7601, indicating no significant effect on firm performance. *Operational Efficiency* also shows a positive but insignificant coefficient of 0.0064 with a probability of 0.9861. Simultaneously, the regression model is significant with an F-statistic of 31.7579 and a probability value of 0.0000. The Adjusted R² value of 0.9141 indicates that 91.41% of the variation in firm performance can be explained by the variables included in the model, while the remaining 8.59% is explained by other factors outside the model.

Sub-Structural II Path Analysis

The second sub-structural model examines the effect of *Firm Size* and *Cost of Capital* on *Operational Efficiency*.

Model Selection Test Sub-Structural II

The panel data model selection results indicate that the *Random Effect Model* is the most appropriate estimation method for this study.

Table 7
Model Selection Test Results (Sub-Structural II)

Test Type	Statistic Value	Probability	Remark
Chow Test	131.2753	0.0000	Fixed Effect Model Selected
Hausman Test	1.8867	0.3893	Random Effect Model Selected
Lagrange Multiplier Test	171.5886	0.0000	Random Effect Model Selected

The Chow Test produces a statistic value of 131.2753 with a probability of 0.0000, indicating that the panel model is preferable to the *Pooled Least Square Model*. The Hausman Test shows a statistic value of 1.8867 with a probability of 0.3893, indicating that the *Random Effect Model* is more suitable than the *Fixed Effect Model*. The Lagrange Multiplier Test also reports a statistic value of 171.5886 with a probability of 0.0000, confirming the use of the *Random Effect Model*. These results indicate that random individual differences among firms are relevant in explaining operational efficiency.

Classical Assumption Sub-Structural II

The classical assumption test results indicate that the regression model fulfills the required assumptions.

Heteroscedasticity Test (Sub-Structural II)

The heteroscedasticity test in *Sub-Structural II* is conducted to examine whether the residual variance remains constant across all observations. A model free from heteroscedasticity indicates that the regression estimates are efficient and statistically reliable. The test results are presented in the following table.

Table 8
Heteroscedasticity Test In Sub-Structural II

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.197566	0.890903	2.466672	0.0146
FS	-0.051862	0.028667	-1.809119	0.0721
CoC	-1.352940	0.737995	-1.833264	0.0684

The heteroscedasticity test results in *Sub-Structural II* show probability values of 0.0721 for *Firm Size* and 0.0684 for *Cost of Capital*. Both values are above the 0.05 significance level, indicating that the independent variables do not significantly affect the residuals. These findings confirm that the regression model is free from heteroscedasticity and has constant residual variance across observations.

Multicollinearity Test (Sub-Structural II)

The multicollinearity test in *Sub-Structural II* is conducted to determine whether strong correlations exist among the independent variables. A model free from multicollinearity allows each variable to explain the dependent variable independently and accurately. The test results are presented in the following table.

Table 9
Multicollinearity Test In Sub-Structural II

	OE	FS	CoC
OE	1.000000	-0.225137	-0.147193
FS	-0.225137	1.000000	0.054775
CoC	-0.147193	0.054775	1.000000

The multicollinearity test results in *Sub-Structural II* show that the correlation between *Firm Size* and *Cost of Capital* is 0.0548, while the correlations involving *Operational Efficiency* remain low. All correlation values are far below the threshold of 0.80, indicating that no strong linear relationship exists among the variables. These findings confirm that the regression model is free from multicollinearity problems.

Hypothesis Test (Sub-Structural II)

Hypothesis testing is conducted to examine the direct and simultaneous effects of *Firm Size* and *Cost of Capital* on *Operational Efficiency*. This stage also evaluates the explanatory power of the regression model through partial tests, simultaneous tests, and the coefficient of determination.

Table 10
Hypothesis Test (Sub-Structural II)

Test	Indicator	Result	Conclusion
t-Test	FS = -0.1279 (0.0029)	Significant negative	Accepted
t-Test	CoC = -2.0459 (0.0620)	Not significant	Rejected
F-Test	6.6629 (0.0016)	Significant simultaneously	Accepted
Adjusted R ²	0.0586	5.86% explanatory power	Weak model

The hypothesis testing results show that *Firm Size* has a significant negative effect on *Operational Efficiency* with a coefficient of -0.1279 and a probability value of 0.0029. This finding indicates that larger firms tend to experience lower efficiency levels. *Cost of Capital* has a negative coefficient of -2.0459 with a probability of 0.0620, indicating no significant effect on operational efficiency. Simultaneously, the regression model is significant with an F-statistic of 6.6629 and a probability value of 0.0016. The Adjusted R² value of 0.0586 indicates that 5.86% of the variation in

operational efficiency can be explained by the variables included in the model, while the remaining 94.14% is explained by other factors outside the model.

The Impact Between Firm Size and Firm Performance

The first hypothesis testing results show that *Firm Size* has a significant negative effect on *Firm Performance*, with a coefficient of -1.1353 and a probability value of 0.0000. This finding indicates that larger companies tend to experience lower financial performance during the 2022–2024 period. An increase in total assets and organizational scale does not automatically improve profitability, but instead may reduce performance when growth is accompanied by higher coordination costs, managerial complexity, and weaker asset productivity. These results suggest that several non-financial companies listed on the Indonesia Stock Exchange may have experienced diminishing returns from expansion. From the *Resource-Based View*, firm size represents an important resource, yet resources only create advantage when they are managed effectively. The negative relationship implies that many firms were unable to convert their larger asset base into superior capabilities or stronger competitive outcomes. This result is consistent with the concept of *diseconomies of scale*, where excessive growth creates bureaucracy, slower decision-making, agency problems, and inefficient capital allocation. The findings emphasize that organizational agility, efficient internal systems, and productive resource management are more important than asset accumulation alone in improving firm performance.

The Impact Between Cost of Capital and Firm Performance

The second hypothesis testing results show that *Cost of Capital* does not have a significant effect on *Firm Performance*, with a coefficient of 0.3151 and a probability value of 0.7601. This finding indicates that financing costs were not a primary determinant of profitability for non-financial companies listed on the Indonesia Stock Exchange during 2022–2024. Changes in debt costs or equity return expectations did not significantly influence company performance, suggesting that firms were able to maintain financial outcomes despite fluctuations in capital pricing. From the *Resource-Based View*, access to lower-cost funding may be valuable, yet it does not automatically create competitive advantage unless transformed into productive organizational capabilities. The insignificant result implies that financing conditions functioned more as an external market factor than a direct internal driver of performance. During the post-pandemic recovery period, many firms may have relied more on operational strength, market demand, strategic adaptation, and internal efficiency rather than on financing cost optimization. These findings indicate that managing the cost of capital remains important financially, but it was not a decisive factor in explaining firm performance within the observed sample.

The Impact Between Firm Size and Operational Efficiency

The third hypothesis testing results show that *Firm Size* has a significant negative effect on *Operational Efficiency*, with a coefficient of -0.1279 and a probability value of 0.0029. This finding indicates that larger companies tend to experience lower efficiency in converting resources into productive output. Growth in total assets and organizational scale does not automatically improve internal productivity, but may instead reduce efficiency when expansion is followed by increasing coordination costs, slower processes, and more complex management structures. From the *Resource-Based View*, firm size can become a valuable resource only when it is supported by strong managerial systems and effective organizational capabilities. The negative relationship suggests that many firms were unable to transform their larger scale into superior operational performance. This result is consistent with the concept of the *liability of bigness*, where larger organizations face bureaucracy, communication barriers, and inefficient resource allocation. The findings imply that Indonesian non-financial firms need stronger digital systems, leaner structures, and better internal coordination so that company growth can generate efficiency rather than operational burdens.

The Impact Between Cost of Capital and Operational Efficiency

The fourth hypothesis testing results show that *Cost of Capital* does not have a significant effect on *Operational Efficiency*, with a coefficient of -2.0459 and a probability value of 0.0620. Although the coefficient indicates a negative direction, the relationship is statistically insignificant.

This finding suggests that financing costs were not a primary factor influencing the operational productivity of non-financial companies listed on the Indonesia Stock Exchange during 2022–2024. Changes in capital costs did not significantly alter the ability of firms to manage assets, processes, or resource conversion efficiently. From the *Resource-Based View*, the cost of capital represents an external financial condition rather than an internal capability that directly creates efficiency advantages. The insignificant result indicates that operational efficiency was more strongly determined by internal factors such as managerial quality, technological adoption, process systems, and industry practices rather than by financing pressure. During the observed period, many firms may have maintained operational routines independently from capital market fluctuations. These findings imply that improving internal capabilities and operational systems is more important than relying on financing cost reductions to enhance efficiency.

The Impact Between Operational Efficiency and Firm Performance

The fifth hypothesis testing results show that *Operational Efficiency* does not have a significant effect on *Firm Performance*, with a coefficient of 0.0064 and a probability value of 0.9861. Although the coefficient shows a positive direction, the relationship is statistically insignificant. This finding indicates that differences in the ability of non-financial companies listed on the Indonesia Stock Exchange to utilize resources efficiently did not directly lead to meaningful differences in profitability or market performance during 2022–2024. From the *Resource-Based View*, efficiency alone does not automatically create competitive advantage unless it develops into a unique organizational capability that is difficult to imitate. The insignificant result suggests that operational efficiency in many firms may still function at a routine administrative level rather than as a strategic capability that drives superior performance. External factors such as market competition, product innovation, customer demand, and macroeconomic conditions may have played a more dominant role than internal efficiency improvements. These findings imply that efficiency gains need to be integrated with broader strategic and market-oriented initiatives to produce stronger firm performance.

The Mediating Role of Operational Efficiency in the Effect of Firm Size on Firm Performance

The sixth hypothesis testing results show that *Operational Efficiency* does not significantly mediate the relationship between *Firm Size* and *Firm Performance*. The Sobel test produces a t-statistic of -0.0174 with a probability value of 0.9861, which is above the 0.05 significance level. This finding indicates that although firm size has a significant negative effect on operational efficiency, the decline in efficiency does not significantly transmit the effect of firm size to firm performance. The influence of firm size on performance therefore occurs mainly through a direct pathway rather than through operational efficiency. From the *Resource-Based View*, larger firm scale can create competitive advantage only when company resources are transformed into effective internal capabilities. The insignificant mediation result suggests that many firms were unable to convert their scale into strategic efficiency that could improve performance. Problems such as bureaucracy, coordination costs, agency conflicts, and structural rigidity may have had a stronger direct effect on profitability than internal efficiency mechanisms. These findings imply that improving firm performance requires not only operational optimization, but also organizational restructuring so that company size can function as a productive strategic asset.

The Mediating Role of Operational Efficiency in the Effect of Cost of Capital on Firm Performance

The seventh hypothesis testing results show that *Operational Efficiency* does not significantly mediate the relationship between *Cost of Capital* and *Firm Performance*. The Sobel test produces a t-statistic of -0.0174 with a probability value of 0.9861, which is above the 0.05 significance level. This finding indicates that financing costs did not influence company performance through the channel of operational efficiency. Changes in the cost of capital neither created significant operational adjustments nor generated indirect effects on profitability through efficiency improvements. From the *Resource-Based View*, financing conditions can support competitive advantage only when they are transformed into effective internal capabilities. The insignificant mediation result suggests that many firms were unable to convert lower or higher financing costs into

strategic operational improvements that enhance performance. Internal efficiency may have been driven more by managerial routines, market conditions, and industry practices than by funding costs. These findings imply that companies need stronger integration between financial strategy and operational management so that financing decisions can contribute more effectively to long-term firm performance.

CLOSING

Consusion

This study examines the effect of *Firm Size* and *Cost of Capital* on *Firm Performance* with *Operational Efficiency* as a mediating variable, using 61 non-financial companies listed on the Indonesia Stock Exchange during 2022–2024. The results show that *Firm Size* has a significant negative effect on both *Firm Performance* and *Operational Efficiency*. This finding differs from the initial expectation that larger firms would benefit from economies of scale, stronger resources, and broader market access. Instead, increasing company size appears to create bureaucratic complexity, coordination costs, and managerial inefficiencies that weaken profitability and reduce resource optimization. The findings also indicate that *Cost of Capital* does not have a significant effect on either *Firm Performance* or *Operational Efficiency*. This result suggests that corporate returns and internal productivity remained relatively stable despite changes in financing costs during the observation period. *Operational Efficiency* was also found to have no significant effect on *Firm Performance* and failed to mediate the relationship between the independent variables and company performance. The influence of organizational scale on profitability therefore occurred more directly, while potential efficiency gains may have been offset by intense market competition and other external pressures.

Implication

The findings of this research provide several theoretical and practical implications:

1. For Management: The negative impact of firm size suggests that "bigger is not always better." Large-scale companies must prioritize flattening bureaucratic structures and improving internal communication to mitigate the "diseconomies of scale" that currently erode their profitability.
2. For Investors: When evaluating non-financial firms in Indonesia, investors should look beyond total assets as a sign of strength. Since large size currently correlates with lower efficiency and performance, focus should be placed on how well a company manages its existing complexity rather than just its growth in scale.
3. For Theory: This study challenges the traditional view that operational efficiency is the primary bridge between firm resources and performance. In the Indonesian context (2022-2024), external market factors or other internal variables may hold more weight than basic operational resource optimization.

Limitation

Despite the rigorous methodology, this study acknowledges the following limitations:

1. Sectoral Scope: The research focuses exclusively on non-financial companies. Due to different regulatory frameworks and capital structures, these results cannot be generalized to the financial or banking sectors.
2. Time Constraint: The three-year observation period (2022-2024) captures a specific post-pandemic recovery phase, which may not reflect long-term cyclical trends or the full impact of organizational maturation.
3. Variable Selection: The model is limited to specific financial metrics. It does not account for qualitative or external factors such as managerial quality, digital transformation, or macro-economic shifts that likely influence firm performance.

Suggestion for Future Research

Research endeavors seeking to expand the breadth of these observations might benefit from a multi-faceted approach, particularly by prioritizing the subsequent considerations:

1. Incorporate Qualitative Variables: Future research should include indicators like managerial capability, digital maturity, and corporate governance to better understand the catalysts required to turn operational efficiency into a strategic asset.
2. Expand Scope and Timeline: It is recommended to extend the observation period to at least a decade and include a comparative analysis between financial and non-financial sectors to see if these trends hold across different industries.
3. Advanced Methodologies: Researchers should consider using more sophisticated measurement tools, such as Data Envelopment Analysis (DEA) for efficiency or Tobin's Q for market-based performance, to provide a more comprehensive view of a firm's long-term sustainability and market value.

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