



# THE EFFECT OF FIRM SIZE, LEVERAGE, AND PROFITABILITY ON FIRM VALUE WITH SYSTEMIC RISK AS A MODERATING VARIABLE IN BANKING COMPANIES LISTED ON THE INDONESIA STOCK EXCHANGE DURING 2021-2025

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## Abstract

This study aims to examine the effect of firm size, leverage, and profitability on firm value with systemic risk as a moderating variable in banking companies listed on the Indonesia Stock Exchange during the 2021–2025 period. The research employed a quantitative approach using panel data, combining time-series and cross-sectional data. Panel data regression with the Moderated Regression Analysis (MRA) approach was applied to analyze the relationships among variables. The findings indicate that firm size has a positive but insignificant effect on firm value, implying that asset scale is no longer the primary consideration for investors in assessing banking firms. Leverage shows a negative and significant effect on firm value, indicating that high debt levels increase investors' perceptions of financial risk. Profitability demonstrates a relatively weak influence on firm value in the baseline model. However, after systemic risk is incorporated as a moderating variable, the relationships among variables become more dynamic and significant. Systemic risk strengthens the effect of profitability and mitigates the negative impact of leverage on firm value, while weakening the influence of firm size. These results confirm that firm value in the modern banking industry is determined not only by internal financial fundamentals but also by external conditions and financial system stability. Therefore, banking companies need adaptive strategies through effective risk management, operational efficiency, and stronger resilience to systemic pressures in order to enhance firm value sustainably.

**Keywords:** Firm Size, Leverage, Profitability, Firm Value, Systemic Risk

## INTRODUCTION

The increasingly dynamic development of global economic activities has intensified competition among companies, particularly in the banking sector, which plays a strategic role in maintaining the stability of the national financial system. Banking institutions are not only required to maintain liquidity and public trust, but also expected to create sustainable firm value for shareholders. From the perspective of the capital market, firm value serves as an important indicator reflecting investors' perceptions of a company's prospects, risks, and ability to generate future profits. The higher the firm value, the greater the level of investor confidence in the sustainability of the company's performance (Brigham, & Houston, 2022)

Conceptually, firm value represents the market value of a business entity, which is reflected through stock prices or market ratios such as Price to Book Value (PBV). Firm value is not only influenced by external market factors, but also determined by management's ability to manage company resources effectively and efficiently. Within the framework of signaling theory, financial information disclosed by companies serves as a signal for investors in making investment decisions. Therefore, changes in financial ratios such as firm size, leverage, and profitability are frequently used by investors as primary indicators in assessing firm quality (Ross & Westerfield, 2022; Husnan, & Pudjiastuti, 2015)

Firm size is one of the fundamental factors frequently associated with increasing firm value. Companies with large total assets are generally perceived to possess more stable operational capabilities, broader access to funding, and better risk diversification compared to smaller firms. From the perspective of the Resource-Based View (RBV), firm size reflects the capacity of strategic resources owned by the company to create sustainable competitive advantages. However, excessively large firms may also encounter operational inefficiencies and managerial complexities that can reduce the effectiveness of value creation (Brigham & Houston, 2022; Barney, 1991).

In addition to firm size, leverage is another important factor in determining firm value. Leverage reflects the extent to which debt is used within a company's capital structure. Based on Trade-Off Theory, the use of debt can increase firm value through tax shield benefits; however, excessive debt usage may increase the risk of financial distress and reduce investor confidence. Therefore, companies need to maintain an optimal capital structure in order to balance risk and return effectively. In the banking industry, leverage is considered a highly sensitive variable because banking activities fundamentally rely on collecting public funds and managing financial liabilities (Modigliani & Mille, 1965 ; Myers, & Majluf, 1984)

Profitability is also a key indicator influencing firm value because it reflects a company's ability to generate profits from its available resources. High profitability indicates management efficiency in utilizing company assets and capital, thereby providing positive signals to investors. According to signaling theory, consistent earnings are perceived as indicators of good and sustainable business prospects. Investors tend to assign higher valuations to companies with strong profitability because they are considered capable of generating optimal returns in the future (Brigham & Houston, 2022 ; Husnan & Pudjastuti, 2015 ; Gitman & Zutter, 2021).

Nevertheless, the relationships among firm size, leverage, profitability, and firm value do not always produce consistent findings. Empirical phenomena in the Indonesian banking sector indicate discrepancies between improvements in fundamental performance and increases in firm value. In several periods, rising assets and profitability were not followed by increases in firm value. This condition suggests the existence of a research gap, indicating that investors consider not only fundamental factors but also external factors and more complex business environmental conditions. This phenomenon reinforces the relevance of Contingency Theory, which states that the effectiveness of corporate strategies is influenced by the external environmental conditions faced by the company (Donaldson, 2001).

In recent years, the Indonesian banking sector has undergone structural transformation driven by the acceleration of digitalization. Digital banking has transformed banking business models into systems that are more efficient, flexible, and technology-oriented. The implementation of digital banking not only improves operational efficiency but also expands access to financial services and enhances customer experience. From the Resource-Based View (RBV) perspective, digital capability

is considered a strategic resource that can create competitive advantage and increase firm value. Banks that are able to effectively adopt digital banking tend to receive positive perceptions from investors because they are viewed as having strong adaptability to changes in the business environment (Gomber & Koch, 2017 ; Laudon & Traver, 2022).

On the other hand, digital transformation also increases the complexity of risks within the banking industry, particularly systemic risk. Systemic risk refers to risks arising from the interconnectedness among financial institutions, where the failure of one institution may trigger a chain reaction affecting the entire financial system. In the digital era, financial system interconnectivity has become increasingly intensive, causing the potential transmission of risk to spread more rapidly. Systemic risk can influence investor perceptions regarding the stability and sustainability of banking companies. Therefore, systemic risk becomes an important factor that may strengthen or weaken the relationship between a company’s fundamental factors and firm value (Gorton & Metrick, 2012 ; Minsky, 1986).

Table 1.

Average Values of Firm Size, Leverage, Profitability, and Firm Value of Banking Sector Companies

Year	Firm Size	Leverage	Profitability	Firm Value
2021	582,10	82,40	1,55	5,48
2022	584,39	83,25	1,62	6,01
2023	585,83	85,03	1,66	3,53
2024	588,54	84,88	1,60	3,23
2025	590,10	85,20	1,68	3,45

Source: Indonesia Stock Exchange (IDX), 2021–2025 Period.

If presented in graphical form, it is as follows:

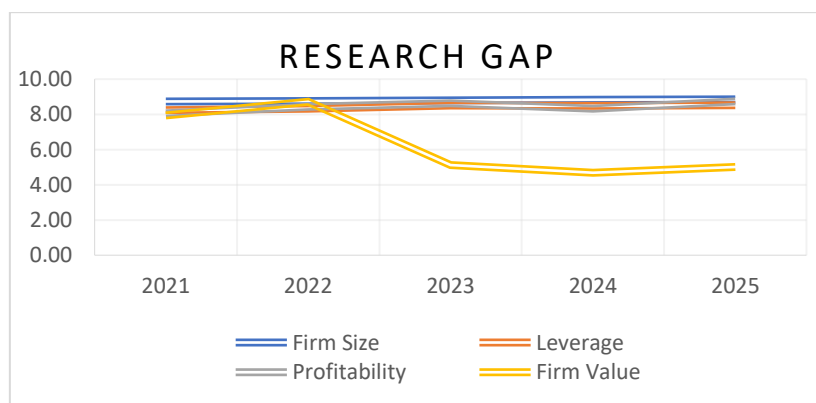


Figure 1

Research Gap in Firm Size, Leverage, Profitability, and Firm Value of Banking Sector Companies

Source: Processed Data from IDX, 2021–2025 Period

Empirical data from banking companies listed on the Indonesia Stock Exchange during the 2021–2025 period indicate fluctuations in firm size, leverage, profitability, and firm value. In several periods, increases in leverage were positively responded to by the market, while increases in

profitability did not always lead to higher firm value. This condition suggests that investors have begun to consider aspects of digitalization and systemic risk when evaluating banking companies. In other words, firm value in the modern era is no longer determined solely by traditional fundamental factors, but also by a company's ability to effectively manage digital transformation and systemic risk.

Previous studies examining the effects of firm size, leverage, and profitability on firm value have produced inconsistent findings. Some studies reported positive and significant effects, while others found weak or even insignificant relationships. Research conducted (L. S. R. D. & Subakir, 2025) demonstrated that the influence of fundamental variables on firm value in the banking sector remains contextual and is affected by business environmental factors. Therefore, this study introduces novelty by incorporating systemic risk as a moderating variable in order to explain the relationship between firm size, leverage, profitability, and firm value more comprehensively.

Based on the empirical phenomena, research gap, as well as the development of digital transformation and risk complexity in the banking sector, this study is considered highly relevant to conduct. This research is expected to contribute theoretically to the development of financial management and banking literature, particularly regarding the integration of corporate fundamental factors and systemic risk in explaining firm value. In addition, this study is also expected to provide practical contributions for banking management, investors, and regulators in formulating strategies and policies oriented toward enhancing firm value sustainably. Therefore, this research is entitled **“The Effect of Firm Size, Leverage, and Profitability on Firm Value with Systemic Risk as a Moderating Variable.”**

## **LITERATURE REVIEW**

### **Signaling Theory**

Signaling Theory explains that companies provide signals to investors through published financial information in order to reduce information asymmetry between management and external parties. According to (Spence Michael, 1973), these signals are used by investors to assess a company's prospects and quality. In the context of financial management, firm size, leverage, and profitability are indicators frequently used by investors in evaluating firm value. Brigham & Houston, (2022) state that information regarding profitability and capital structure can influence market perceptions of a company's risk and future prospects. Therefore, companies with strong financial performance tend to receive positive responses from investors, which are reflected in increased firm value.

### **Trade-Off Theory**

Trade-Off Theory explains that companies determine an optimal capital structure by balancing the benefits of debt usage against the risks it creates. Modigliani & Miller (1963) stated that the use of debt provides tax shield benefits that can increase firm value. However, Kraus & Litzenberger (1973) explained that excessive debt usage may increase the risk of bankruptcy or financial distress. Therefore, companies must seek an equilibrium point between the benefits and costs of debt usage in order to maximize firm value. According to Gitman & Zutter (2021), optimal leverage can increase shareholder returns, whereas excessive leverage may reduce investor confidence in the company.

### **Contingency Theory**

Contingency Theory states that there is no single organizational strategy or structure that is universally effective for all companies because the effectiveness of corporate decisions is influenced by both external and internal environmental factors. Donaldson (2001) explained that the relationship between financial variables and firm value is highly influenced by business environmental conditions, competition intensity, and economic changes. In the banking sector context, technological changes, digitalization, and systemic risk may affect how investors respond to firm size, leverage, and profitability. Therefore, the influence of fundamental variables on firm value is contextual and does not always produce consistent results.

### **Firm Size**

Firm size reflects the scale of operations and economic capacity of a company, which is generally measured by total assets. Large companies usually have broader access to funding, better business diversification, and higher investor confidence compared to smaller firms. According to Brigham & Houston (2022) large firms tend to be more stable in facing business risks, thereby having greater opportunities to increase firm value. However, excessively large firms may also encounter operational inefficiencies and managerial complexities that can reduce their effectiveness in creating added value.

### **Leverage**

Leverage is a ratio that describes the extent of debt usage in a company's capital structure to finance assets and operational activities. The use of leverage can increase a company's profit potential, but on the other hand, it also raises financial risk if the company fails to meet its obligations. According to Brigham & Houston (2022) high leverage can increase shareholder returns as long as the company is able to manage debt effectively. However, excessive leverage may increase bankruptcy

risk and reduce firm value. In the banking sector, leverage becomes an important variable because banks' primary activities are closely related to the collection and management of public funds.

### **Profitability**

Profitability reflects a company's ability to generate profits from its available resources. Profitability ratios such as Return on Equity (ROE) are commonly used to measure a company's effectiveness in generating returns for shareholders. According to Gitman & Zutter (2021) high profitability reflects management efficiency in managing company assets and capital, thereby providing positive signals to investors. From the perspective of signaling theory, companies with high profitability tend to gain greater investor confidence because they are considered to have strong and sustainable business prospects.

### **Firm Value**

Firm value represents investors' perceptions of a company's level of success, which is reflected through stock prices in the capital market. Firm value is often proxied using Price to Book Value (PBV) because this ratio indicates how the market values a company relative to its book value. According to Damodaran, (2012), firm value reflects investors' expectations regarding the company's ability to generate future cash flows. The higher the firm value, the higher the level of investor confidence in the company's prospects. Therefore, increasing firm value becomes the primary objective of management in creating shareholder wealth.

### **Systemic Risk**

Systemic risk refers to risks arising from the interconnectedness among financial institutions, where the failure of one institution may trigger instability throughout the entire financial system. This risk generally occurs due to high financial market interconnectivity, global economic volatility, and increasing complexity of banking activities. According to (Gorton, & Metrick, 2012), systemic risk can lead to financial crises with widespread impacts on economic stability and investor confidence. Minsky (1986) also explained that prolonged stability may encourage excessive risk-taking, which ultimately increases the potential for systemic crises. In the banking sector, rising systemic risk can influence investor perceptions regarding the stability and ability of banks to maintain financial performance, thereby potentially strengthening or weakening the effects of firm size, leverage, and profitability on firm value.

**The following is the conceptual framework based on the proposed hypotheses:**

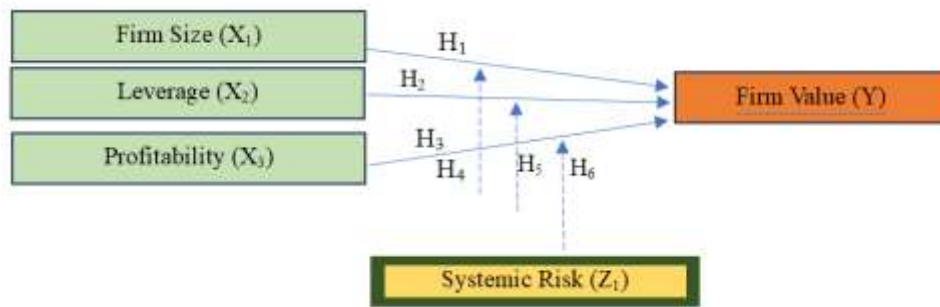


Figure 1 Conceptual Framework

**Research Hypotheses**

*Direct Effects of Independent Variables on Firm Value*

- H<sub>1</sub>: Firm size has a positive effect on firm value in banking companies listed on the Indonesia Stock Exchange during the 2021–2025 period.
- H<sub>2</sub>: Leverage has a negative effect on firm value in banking companies listed on the Indonesia Stock Exchange during the 2021–2025 period.
- H<sub>3</sub>: Profitability has a positive effect on firm value in banking companies listed on the Indonesia Stock Exchange during the 2021–2025 period.

*Moderating Effect of Systemic Risk*

- H<sub>4</sub>: Systemic risk moderates the effect of firm size on firm value in banking companies listed on the Indonesia Stock Exchange during the 2021–2025 period.
- H<sub>5</sub>: Systemic risk moderates the effect of leverage on firm value in banking companies listed on the Indonesia Stock Exchange during the 2021–2025 period.
- H<sub>6</sub>: Systemic risk moderates the effect of profitability on firm value in banking companies listed on the Indonesia Stock Exchange during the 2021–2025 period.

**METHOD**

This study was conducted to analyze and explain the effects of firm size, leverage, and profitability on firm value with systemic risk as a moderating variable. The research approach was selected because it emphasizes empirical hypothesis testing through the use of quantitative data analyzed using statistical and econometric methods (Gujarati & Porter, 2025 ; Ghozali, 2021). This study utilized panel data, which combines time-series data from the 2021-2025 period and cross-sectional data from banking companies listed on the Indonesia Stock Exchange, enabling the analysis to capture changes in company conditions over time as well as differences in characteristics among companies (Wooldridge, 2019)

Table 2. Research Sample Criteria

Criteria	Number of Banks
Banks listed on the Indonesia Stock Exchange (Population)	30
Banks with complete financial statements	25

Digital-based banks / banks providing digital services	16
Banks fulfilling all research criteria	16

Source: Banking Companies Listed on the Indonesia Stock Exchange (IDX)

The study began with descriptive statistical analysis aimed at providing an overview of the characteristics of the research data, including mean values, minimum values, maximum values, and the distribution patterns of each variable. The next stage involved classical assumption testing, including normality, multicollinearity, heteroscedasticity, and autocorrelation tests, to ensure that the regression model met the BLUE (Best Linear Unbiased Estimator) criteria, thereby producing valid and efficient estimation results (Gujarati & Porter, 2025 ; Ghozali, (2021). Subsequently, panel data regression model selection was conducted by comparing the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). The CEM was used as the general model, FEM was employed to accommodate differences in company characteristics, while REM was used to capture random effects among research units. The most appropriate model was determined through the Chow test, Hausman test, and Lagrange Multiplier (LM) test (Wooldridge, 2019).

The subsequent stage involved hypothesis testing using panel data regression with the Moderated Regression Analysis (MRA) approach by constructing interaction variables between the independent variables and the moderating variable, namely systemic risk. The moderating variable was used to determine whether systemic risk strengthens or weakens the relationships between firm size, leverage, profitability, and firm value. After the best model had been determined, panel data regression estimation was performed by incorporating the moderating variable through interaction terms so that the moderating effects could be empirically analyzed (Ghozali, 2021)

$$FV_{it} = \alpha + \beta_1 SIZE_{it} + \beta_2 LEV_{it} + \beta_3 PROF_{it} + \beta_4 (SIZE_{it} \times SR_{it}) + \beta_5 (LEV_{it} \times SR_{it}) + \beta_6 (PROF_{it} \times SR_{it}) + \varepsilon_{it}$$

### Model Description

Y<sub>it</sub> : Firm value of bank *i* in period *t*

α : Constant

β<sub>1</sub> : Firm size coefficient

β<sub>2</sub> : Leverage coefficient

β<sub>3</sub> : Profitability coefficient

Z : Systemic risk (moderating variable)

X\*ZX : Interaction variable to test the moderating effect

ε<sub>it</sub> : Error term or research residual

### RESULTS AND DISCUSSION

Descriptive analysis was used to describe the condition of the research variables consisting of firm value (Firm Value/FV), firm size (Firm Size/SIZE), leverage (LEV), and profitability (PROF) in

banking sector companies during the observation period. Through this analysis, the mean values, data distribution levels, and distribution patterns of each research variable can be identified. Therefore, descriptive analysis functions to provide a general overview of the banking industry conditions that became the object of this study, as well as an initial basis for understanding the relationships among variables before further empirical testing is conducted.

Table 3. Results of Descriptive Statistical Analysis

	SIZE	LEV	PROF	PV
Mean	32.85300	4.329500	1.647000	2.650250
Median	33.07000	5.250000	1.810000	1.385000
Maximum	35.55000	9.150000	4.250000	18.20000
Minimum	23.15000	0.250000	-8.500000	0.520000
Std. Dev.	1.729756	2.352782	1.928767	3.117707
Skewness	-0.323698	-0.556148	-2.280366	2.988222
Kurtosis	2.145124	2.394990	12.10209	13.20058
Jarque-Bera	3.833117	5.344122	345.4945	465.8989
Probability	0.147112	0.069110	0.000000	0.000000
Sum	2628.240	346.3600	131.7600	212.0200
Sum Sq.	86581.94	1936.877	510.8998	1329.794
Sum Sq. Dev.	236.3723	437.3112	293.8911	767.8878
Observations	80	80	80	80

Source: Processed Data, 2026

The results of the descriptive statistical analysis in Table 03 show that during the 2021–2025 period, the firm size variable (Firm Size) had an average value of 586.19, with the lowest value of 582.10 in 2021 and the highest value of 590.10 in 2025. These findings indicate that banking companies experienced an increase in asset scale from year to year. The leverage variable showed an average value of 84.15, with a minimum value of 82.40 and a maximum value of 85.20, reflecting a relatively high but still stable level of debt utilization. Meanwhile, profitability measured using ROE had an average value of 1.62, with a minimum value of 1.55 and a maximum value of 1.68, indicating that the companies’ ability to generate profits tended to improve despite fluctuations during the research period. Furthermore, firm value proxied by PBV showed an average value of 4.34, with the lowest value of 3.23 in 2024 and the highest value of 6.01 in 2022. These conditions indicate that market assessments of banking companies experienced considerable fluctuations.

Based on the results of the classical assumption tests, the regression model used in this study fulfilled the BLUE (Best Linear Unbiased Estimator) criteria. The normality test results showed that the Jarque-Bera probability value was above 0.05, indicating that the research data were normally distributed. In the multicollinearity test, all Variance Inflation Factor (VIF) values were below 10, indicating the absence of serious multicollinearity problems among the independent variables. In addition, the heteroscedasticity test results showed probability values greater than 0.05, meaning that the model was free from heteroscedasticity problems. Furthermore, the autocorrelation test results indicated that the Durbin-Watson statistic ranged from 1.8 to 2.1, signifying that no autocorrelation occurred in the regression model. Therefore, the regression model was considered to meet the requirements for hypothesis testing.

In the process of selecting the panel data regression model, the Chow test results showed a probability value of 0.0000, which was smaller than 0.05, indicating that the Fixed Effect Model

(FEM) was more appropriate than the Common Effect Model (CEM). Furthermore, the Hausman test produced a probability value of  $0.012 < 0.05$ , indicating that FEM was more suitable than the Random Effect Model (REM). In addition, the Lagrange Multiplier (LM) test also showed a probability value of  $0.000 < 0.05$ , indicating that the use of the panel data model was better than the ordinary pooled model. Based on the overall test results, the Fixed Effect Model (FEM) was selected as the best model because it was considered more capable of explaining differences in characteristics among banks in this study.

Table 4. Baseline Model Regression Results

Dependent Variable: FV  
Method: Least Squares  
Date: 04/25/26 Time: 20:30  
Sample: 1 80  
Included observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.561576	9.516933	0.059008	0.9531
SIZE	0.165900	0.311607	0.532401	0.5960
LEV	-0.702836	0.200060	-3.513118	0.0007
PROF	-0.193506	0.209464	-0.923815	0.3585

R-squared	0.279682	Mean dependent var	2.650250
Adjusted R-squared	0.251249	S.D. dependent var	3.117707
S.E. of regression	2.697765	Akaike info criterion	4.871431
Sum squared resid	553.1233	Schwarz criterion	4.990533
Log likelihood	-190.8573	Hannan-Quinn criter.	4.919183
F-statistic	9.836325	Durbin-Watson stat	1.158281
Prob(F-statistic)	0.000015		

Source: Processed Data, 2026

Based on the regression results of the baseline model in Table 04, the following regression equation was obtained:

$$FV = 0.561576 + 0.165900SIZE - 0.702836LEV - 0.193506PROF$$

The constant value of 0.561576 indicates that when all independent variables are assumed to remain constant or equal to zero, the firm value remains at that level. The firm size variable (SIZE) has a positive coefficient of 0.165900, indicating that every one-unit increase in firm size will be followed by an increase in firm value of 0.165900, although the effect is not yet statistically significant. These findings indicate that the scale of the company has not fully become a dominant factor in influencing firm value in the banking industry.

Table 5. Regression Results with Systemic Risk as a Moderating Variable

Dependent Variable: FV  
 Method: Least Squares  
 Date: 04/26/26 Time: 08:37  
 Sample: 1 80  
 Included observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	22.04779	12.38663	1.779967	0.0792
LEV	-3.846195	1.170511	-3.285910	0.0016
PROF	-4.400883	0.992454	-4.434342	0.0000
SIZE	0.253468	0.470857	0.538312	0.5920
LEVXSR	5.020337	1.707299	2.940514	0.0044
PROFXSR	7.110481	1.567882	4.535086	0.0000
SIZEXSR	-1.223958	0.236932	-5.165865	0.0000

R-squared	0.584026	Mean dependent var	2.650250
Adjusted R-squared	0.549837	S.D. dependent var	3.117707
S.E. of regression	2.091801	Akaike info criterion	4.397361
Sum squared resid	319.4211	Schwarz criterion	4.605788
Log likelihood	-168.8944	Hannan-Quinn criter.	4.480925
F-statistic	17.08198	Durbin-Watson stat	1.921938
Prob(F-statistic)	0.000000		

Source: Processed Data, 2026

$$FV = 22.04779 - 3.846195LEV - 4.400883PROF + 0.253468SIZE + 5.020337(LEV \times SR) + 7.110481(PROF \times SR) - 1.223958(SIZE \times SR)$$

The constant value of 22.04779 reflects the baseline level of firm value when all independent variables are assumed to remain constant. The leverage variable (LEV) has a negative coefficient of -3.846195, indicating that every one-unit increase in leverage will reduce firm value by 3.846195. A similar condition is also observed in the profitability variable (PROF), which has a coefficient of -4.400883, indicating a negative effect on firm value. On the other hand, the firm size variable (SIZE) has a positive coefficient of 0.253468, indicating that firm size still contributes positively to increasing firm value, although its effect is relatively limited.

However, after the systemic risk variable was introduced as a moderating variable, the relationships among variables showed substantial changes. The interaction coefficient of LEV×SR amounting to 5.020337 indicates that systemic risk is able to reduce and even reverse the negative effect of leverage into a positive one. This finding suggests that under conditions of high systemic risk, the use of debt can still contribute to increasing firm value when managed optimally. In addition, the interaction coefficient of PROF×SR amounting to 7.110481 indicates that systemic risk strengthens the effect of profitability on firm value, meaning that the company’s ability to generate profits becomes more highly considered by investors. In contrast, the SIZE×SR coefficient of -1.223958 indicates that systemic risk weakens the influence of firm size on firm value. This condition implies that large-scale companies face greater pressure and market expectations during periods of increasing systemic risk.

The results of the coefficient of determination (R<sup>2</sup>) test show that the model’s ability to explain variations in firm value increased significantly after the moderating variable was included in the research model. In the baseline model, the R<sup>2</sup> value of 0.279682 indicates that the variables of firm size (SIZE), leverage (LEV), and profitability (PROF) were only able to explain 27.96% of the variation in firm value, while the remaining 72.04% was influenced by other factors outside the

model. However, after Digital Banking (DB) was used as a moderating variable, the  $R^2$  value increased to 0.5573 or 55.73%, with an Adjusted  $R^2$  value of 0.5209. These results indicate that the research model became stronger and more stable. This increase of 27.77% confirms that digital transformation plays an important role in strengthening the relationship between financial performance and firm value.

Furthermore, the model using Systemic Risk (SR) as a moderating variable produced the most optimal results, with an  $R^2$  value of 0.5840 or 58.40% and an Adjusted  $R^2$  value of 0.5498, which were the highest among all models. These findings indicate that the combination of SIZE, LEV, PROF, and their interactions with systemic risk was able to explain more than half of the variation in firm value. Compared to the baseline model, there was an increase of 30.44%, indicating that systemic risk is a highly dominant external factor influencing investor perceptions of banking companies. Therefore, digital banking and systemic risk can be viewed as contingency variables that strengthen the research model and provide broader insights into the dynamics of firm value in the Indonesian banking sector.

## **Discussion**

The results of this study indicate that the firm size variable (Firm Size/SIZE) in the baseline model has a positive coefficient of 0.165900, but it is not statistically significant with a probability value of  $0.5960 > 0.05$ . These findings indicate that firm size does not significantly affect firm value. This condition suggests that during the 2021–2025 period, the scale of bank assets was no longer the primary signal considered by investors in evaluating companies. This phenomenon reflects a shift in market preferences from an asset-based perspective toward an efficiency-based perspective, where investors pay greater attention to operational efficiency, digitalization, and asset quality rather than merely company size. From a theoretical perspective, these findings indicate that Signaling Theory and the Resource-Based View (RBV) are not fully applicable in the context of modern banking, because large asset ownership does not automatically create market value. There are even indications of diseconomies of scale, a condition in which increasing assets generate greater complexity and operational costs. Therefore, firm size will only provide added value when supported by strong digitalization and operational efficiency.

In contrast to firm size, the leverage variable (LEV) shows a negative and significant effect on firm value with a coefficient of -0.702836 and a probability value of  $0.0007 (< 0.05)$ . These results indicate that the higher the company's debt level, the lower the firm value. Investors perceive high leverage as a signal of increasing financial risk and the potential for financial distress, thereby reducing market confidence in banking companies. These findings are consistent with the Trade-Off Theory, which states that debt usage has an optimal limit, where beyond that point the costs of

bankruptcy become greater than the benefits of tax shields. In the context of Indonesian banking during the 2021–2025 period, leverage was considered to have exceeded its optimal level, thus generating a negative market response. This condition was also reinforced by the increasing trend of global interest rates, which raised the cost of funds and increased liquidity risk in banking companies.

The findings of this study also confirm that digital banking acts as a strategic catalyst rather than a factor that automatically increases firm value. Digitalization is only capable of creating added value when supported by a healthy capital structure and strong operational efficiency. Otherwise, if not managed optimally, digitalization may instead become an additional burden that increases financial risk and reduces investor confidence. In the second moderation model, Systemic Risk (SR) was proven to have a significant role. The interaction coefficient of SIZE×SR amounting to -1.223958 with a significance level of 0.0000 indicates that systemic risk weakens the influence of firm size on firm value, while the interaction coefficient of LEV×SR amounting to 5.020337 with a significance level of 0.0044 indicates that systemic risk is able to reduce the negative impact of leverage. This condition suggests that under high uncertainty conditions, investors become more tolerant of debt usage because it is perceived as the result of external pressures rather than merely management failure.

In addition, the interaction coefficient of PROF×SR amounting to +7.110 with a significance level of 0.00000 indicates that Systemic Risk (SR) strengthens the influence of profitability on firm value (Firm Value/FV). Although the initial profitability coefficient (PROF) shows a negative direction, the presence of systemic risk is able to reverse the relationship into a positive one. These findings indicate that under conditions of high systemic risk, corporate profits will receive greater market appreciation when supported by transparency, business sustainability, and the company's ability to maintain stability and investor confidence. Therefore, modern banking strategies need to integrate digital efficiency, capital structure management, and systemic risk mitigation simultaneously in order to enhance firm value sustainably.

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