INKUBIS: Jurnal Ekonomi dan Bisnis
Volume 8, Issue 3, 1823-1839
e_ISSN: 2775-3913
https://inkubis.polteksci.ac.id/index.php/ink/index
DOI: doi.org/10.59261/inkubis.v8i3.266

Can Enterprise Risk Management Truly Boost Firm Value? Evidence From ROA and Board Independence

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Article Info:
***Article history*:**
Received: April 28, 2026
Revised: July 17, 2026
Accepted: August 11, 2026
Available Online: August 21, 2026

***Keywords*:**
Enterprise Risk Management (ERM), Firm Value, Financial Performance (ROA), Independent Directors.

Abstract

Background: Enterprise Risk Management (ERM) has been widely recognized as a strategic approach to managing organizational risks. However, previous studies have reported inconsistent findings regarding its effect on firm value, particularly in the financial sector. This study further examines whether financial performance and board independence strengthen the relationship between ERM and firm value.
Objective: This study aims to investigate the effect of Enterprise Risk Management (ERM) on firm value and to examine the moderating roles of financial performance (ROA) and board independence in the Indonesian financial sector.
Methods: This quantitative study employed panel data from 95 financial sector companies listed on the Indonesia Stock Exchange during 2019–2024, resulting in 570 firm-year observations. ERM was identified through Python-based content analysis of annual reports using predefined ERM-related keywords. Panel regression analysis was conducted using Common Effect, Fixed Effect, and Random Effect Models, with the most appropriate model selected through Chow, Hausman, and Lagrange Multiplier tests.
Results: The findings indicate that ERM has a significant negative effect on firm value. However, financial performance (ROA) significantly strengthens the relationship between ERM and firm value, whereas board independence does not significantly moderate this relationship.
Conclusion: ERM alone does not enhance firm value. Its effectiveness depends on strong financial performance, while board independence does not reinforce the value-creating role of ERM. These findings suggest that firms should integrate ERM with profitability improvement strategies to maximize shareholder value.

To cite this article: Sriwardhani, A., & Alimbudiono, R. S. (2026). Can enterprise risk management truly boost firm value? Evidence from ROA and board independence. *INKUBIS: Jurnal Ekonomi dan Bisnis*, *8*(3), 1823-1839. https://doi.org/10.59261/inkubis.v8i3.266

INTRODUCTION

The fierce competition in today's business world and the uncertainty of future conditions and situations require companies to continue to strive to survive and avoid bankruptcy. The bankruptcy of Silicon Valley Bank (SVB) in 2023 was one of the biggest failures of a financial institution in the US that was unable to see the risks faced by companies. SVB failed to obtain capital from investors, causing its share price to fall by 60%. Its limited assets, coupled with poor company performance, resulted in declining investor confidence and a further decline in the company's share value. Considering this case, when facing uncertain situations in the future, the role of management in a company is crucial in order to increase the company's value and maintain its performance.

Companies must be managed well to avoid various risks such as operational risk, exchange rate risk, liquidity risk, credit risk, fraud, default risk, and market risk. Risk is a condition

that cannot be predicted or avoided in these businesses and risks could potentially impact the company in the future. Therefore, management plays a crucial role in managing risks that may arise in the future, which could have a detrimental impact on the company or even lead to bankruptcy.

Effective risk management requires a comprehensive approach through Enterprise Risk Management (ERM), rather than addressing risks individually. ERM can strengthen a company's resilience while supporting value creation and enhancing overall corporate value. Companies will be able to systematically identify and evaluate risks, and management will be equipped with valuable insights into the risks or benefits associated with projects within the company, investments made, or the direction of the company's strategy. This improved understanding by managers enables them to allocate resources more strategically. Companies can gain benefits and added value by implementing ERM compared to those that do not adopt it. The implementation of ERM in their research also stated that it can significantly help companies increase revenue by 13.72% and achieve cost efficiency of 15.65%.

Several other studies also state that ERM is very important for companies and can have a significant positive impact on firm value. Rahaman & BARI (2024) state that organizations with a strong ERM framework have better decision-making capabilities and are more effective at understanding and managing their corporate risks to make strategic choices that optimize their corporate resources. Alam et al. (2024) state that ERM plays an important role in supporting increasingly complex business companies to navigate risks and protect companies from potential threats and seize strategic opportunities that can increase the competitiveness and operational resilience of companies. Similarly, companies that integrate ERM into their operations can better understand emerging risks, detect and respond to threats more quickly, and ultimately improve organizational agility. Qalby et al. (2023) stated that there was no significant effect on company value, but with the moderation of family ownership as a moderating variable, there was a significant positive effect on company value (Firm Value). Previous studies have conducted many tests related to the role of ERM on company value, but some studies still show differences.

This study aims to complement previous research by examining the effect of ERM on increasing company value. Distinguishes previous studies have examined the moderating effect of ROA, which strengthens the impact of ERM implementation on firm value. In previous studies, ROA was typically used as an independent variable and ERM as a control variable in testing the effect of ERM on firm value. This study highlights three key points that extend and complement the existing literature. (1) the effect of Enterprise Risk Management (ERM) on firm value (2) This study needs to moderate ROA in testing ERM on firm value because ROA reflects financial performance/company performance, which can ultimately increase firm value. Firm value is reflected in the interaction between good company performance and the implementation of good ERM in the company. High ROA requires the implementation of good ERM in the company, which has an impact on increasing firm value. (3) This study examines how the moderating effect of independent directors in their role in the implementation of ERM in companies affects company value. In COSO, the implementation of ERM needs to be supported by good corporate governance. Therefore, testing how the role of independent directors in companies as corporate supervisors has a strong influence on the implementation of ERM is necessary. With the interaction of independent directors and the implementation of good ERM in companies, company value will increase.

The following section provides a more in-depth discussion of the effect of Enterprise Risk Management (ERM) on firm value. Enterprise Risk Management (ERM) in this study is not traditional risk management, which addresses risks partially in each department within a unit each company. ERM as referred to in this study is a series of integrated processes within a company that involve all departments, from the board of directors to the personal level in each department of the company. All elements agree to be able to anticipate risks that may occur in the future. ERM in this study is in accordance with COSO, namely "A process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives." Why do companies need to implement ERM. With the ability of companies to implement ERM to anticipate future risks, it is hoped that the trust of the public/investors in the

company will increase.

Firm value is important because it can influence investors' perceptions of a company's condition or performance. Investors believe that companies with good performance and promising prospects for the future will be willing to invest or buy the company's shares. According to Tumanan & Dyah Ratnawati (2021) firm value is the value that investors are willing to pay if the company is to be sold. High firm value reflects the market's strong confidence in the company. Several studies have shown that ERM has a significant positive effect on firm value. High firm value makes investors believe that the company has strong performance and good future prospects. Firm value on the IDX will also be reflected in high stock prices. Sari et al. (2024) stated that ERM has a significant positive effect on company value as measured using Price to Book Value (PVB). Thamrin & Jasriana (2022) stated that ERM has a significant positive effect on company value as measured using PBV in the banking sector in Indonesia from 2014 to 2018.

The following section focuses on the second key aspect of this study, specifically the moderating role of financial performance in the relationship between Enterprise Risk Management (ERM) and firm value. Firm value reflects a company's financial performance. Good company performance will provide higher returns and ultimately result in greater prosperity for owners and investors. Every company is required to maximize its performance. This requires good management to strengthen company performance. One of the efforts that must be made so that the company Being able to manage performance well means being able to manage risks that arise so that bankruptcy does not occur in the future. Management is required to be capable and have insight into risk management so that the company can make a profit. There are many challenges faced by companies in implementing ERM in their companies. Good performance can ultimately increase the value of the company.

Several studies have linked company performance to an increase in company value. Enterprise Risk Management, Intellectual Capital (IC), and Investment Opportunity Set (IOS) have a significant positive effect on company value and company performance among companies in Malaysia and Indonesia. Meanwhile, Sari et al. (2024) stated that Credit Risk (NPL) has a significant negative effect on company value (PBV) and profitability (ROA & NIM) has no effect on company value (Firm Value) as measured by (PBV). Thamrin & Jasriana (2022) state that ROA and size have a significant positive effect on company value (PBV). Meanwhile, DER/LEV has a negative and insignificant effect on PBV. However, simultaneously, ROA with small size, DER/LEV, and ERM affect PBV.

Several studies above conducted separate tests did not combine how company performance (ROA) strengthens the influence of ERM on company value. This study aims to examine how company performance (ROA) strengthens the influence of ERM on company value. It is interesting to examine whether performance has a direct influence on company value, or whether it strengthens or weakens the influence of ERM on company value. The study by Hermawan et al. (2025) shows that the influence of ERM on firm value, mediated by company performance, yields results indicating that financial performance as a mediating variable acts as an intermediary variable that strengthens the relationship between ERM, IC, IOS, and firm value.

The final aspect of this study examines how financial performance strengthens the effect of Enterprise Risk Management (ERM) on firm value. The COSO definition states that for ERM to function properly, companies must have an ERM framework that can ensure the successful implementation of ERM. There are many challenges and obstacles faced in implementing ERM in companies. ERM must be well integrated into all planning and decision-making processes in the company, and it cannot be done separately.

According to COSO, there are five components to the ERM implementation framework, namely (1) Governance and Culture: Corporate governance is a key strength and determinant of the direction of ERM implementation in a company. In addition, culture is also a key component in determining the implementation of ERM in a company. Without a harmonious culture, ERM implementation is very difficult for companies to carry out. (2) Strategy and Objective Setting: ERM implementation must be aligned with every strategy and objective in the company so that the company's main objectives can be achieved. (3) Performance: companies must be able to select and determine risks and measure them in terms of company performance. These results must be reported to stakeholders in the company. (4) Review & Revision: Performance reviews are essential in the implementation of ERM because companies need to consider how well the

ERM components have been implemented. With reviews and revisions, companies can anticipate future risks. (5) Implementation, Communication & Reporting: ERM in a company requires a continuous process to obtain and share information from both internal and external sources and distribute it to all parties within the company.

The entire ERM framework can function effectively when it receives support from the highest level of the company and is implemented by all elements within the company. Alam et al. (2024) state that the implementation of ERM has many benefits and challenges, but with a special emphasis on the role of leadership, which is essential to empower the implementation of ERM. Leaders need to communicate the value of ERM effectively, respond directly to various concerns, and set an example of behavior that is in line with ERM practices. The leaders referred to in this study are the board of directors and independent directors, who supervise the implementation of ERM in the company. With the support of independent directors in supervising the company's ERM, it is hoped that the company's value will increase. Several studies have stated that there is a relationship between the role of independent directors and company value (Firm Value). Ristiyana et al (2024) stated that the Independent Board of Directors has a significant positive effect on Firm Value. This shows that good governance has an impact on company value. Winarsih Winarsih et al. (2024) state that the results of their research show that there is an influence of independent boards and institutional ownership on company value. However, the number of board members does not affect company value. The implication of this research is the importance of supervision from independent and external parties in monitoring company value.

Guo & Platikanov (2019) found in their study that institutional ownership is positively related to a company's Tobin's Q, and this effect is mainly driven by independent institutional ownership, rather than private institutional ownership. Furthermore, this positive relationship became even stronger after 2005, when there was significant progress in strengthening the legal and institutional foundations of the capital market in China. Conversely, ownership by grey institutions is generally negatively related to company performance, reflecting the value-destructive consequences of conflicts of interest developed by these investors.

The significant changes after 2005 show that strengthening the external legal environment and corporate governance is essential to reinforce the supervisory role of independent institutions. Karamoy & Tulung (2020) state that managerial ownership, institutional ownership, and the composition of independent directors, either partially or simultaneously, do not have a significant effect on stock prices in the non-bank financial industry. Lew et al. (2018) in their research results show that the separation of the positions of CEO and chairman encourages better company performance. However, the appointment of a larger proportion of external independent directors to the board does not have a significant effect on company performance. This study aims to complement existing research related to ERM on company value, which is reinforced by the role of independent directors in supervising the implementation of ERM in companies.

These three key aspects of the study will be investigated using a sample of firms from the financial sector. This sector was chosen because it faces very high uncertainty risks in the future, such as (1) market risk, (2) credit risk, (3) operational risk, and many other risks. The biggest risk for companies in this sector is bankruptcy because they manage public funds or assets. In fact, the OJK requires the banking sector to comply with OJK POJK No. 18/POJK.03/2016 concerning Risk Management for Commercial Banks. In its implementation, banks are required to identify, measure, monitor, and control material risks in an integrated manner with the risk management system and GCG (Good Corporate Governance), supported by the COSO ERM or ISO 31000 framework. Considering the importance of the sector in managing risks in the future by implementing ERM, this study will examine whether ERM can influence an increase in company value, with the moderating roles of financial performance and board independence, or whether it is merely symbolic compliance with OJK regulations, so that for investors, this role is not an important factor in assessing companies for investment.

METHOD

The research method used in this study is quantitative research, based on panel data of financial sector firms including banking, insurance, and other financial institutions listed on the Indonesia Stock Exchange (IDX) during the period 2019–2024 to examine the hypothesized

relationships through rigorous statistical analysis. The conceptual framework underlying the research model used in this study is presented as follows:

The 2019–2024 study period was deliberately selected to capture the full cycle of the COVID-19 pandemic's impact on the financial sector. This period encompasses the pre-pandemic baseline (2019), the acute crisis phase (2020–2021), the recovery period (2022–2023), and the post-pandemic stabilization (2024). The COVID-19 pandemic significantly disrupted financial sector risk profiles, with banks and financial institutions facing unprecedented credit risk deterioration, liquidity constraints, and market volatility (Demirgüç-Kunt et al., 2021). This timeframe enables the examination of whether ERM implementation provided substantive value protection during periods of extreme financial uncertainty or served merely as a regulatory compliance mechanism.

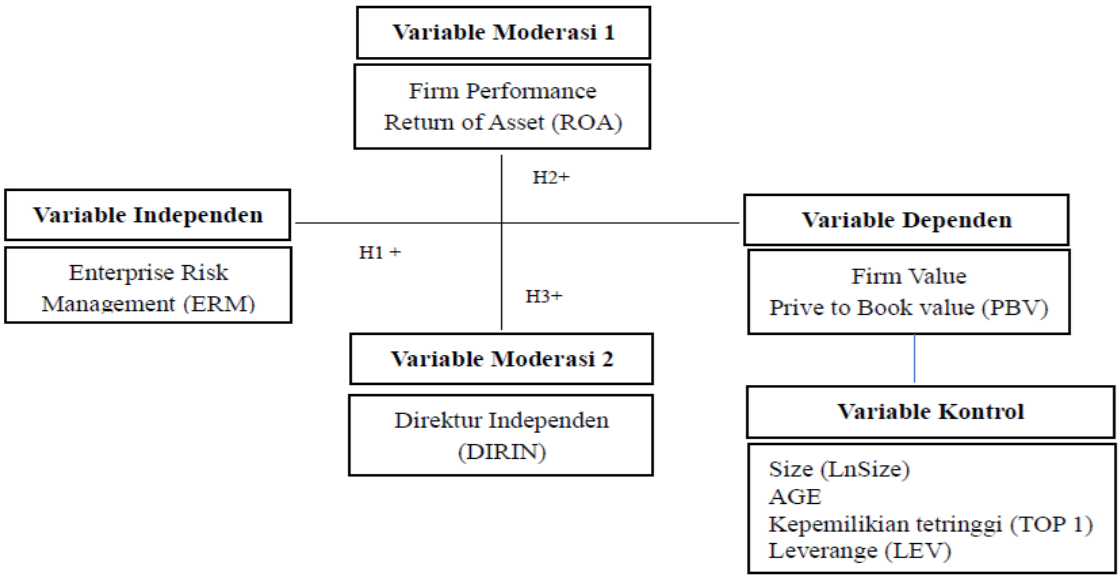

Figure 1. Research Model Conceptual Framework (Researcher's findings)
Source: Author

H1: The ERM has a significant positive effect on firm value.
H2: The role of Firm Performance in strengthening the influence of ERM on Firm Value
H3: The role of Independent Directors in strengthening the influence of ERM on Firm Value

Table (1) shows the sample selection criteria used in the study. The total sample consists of 570 firm years with a total of 95 companies in the financial sector.

Table 1
Sample Selection Criteria

No	Financial Sector	Total			
		Population IDX	Excluded	Firm	Firm-Year
1	Insurance Population Companies that did not publish complete and consecutive financial reports from 2019–2024 Sampel Firm Firm Year (2019-2024)	15	2	13	78
2	Banking Population Companies that did not publish complete and consecutive financial reports from 2019–2024 Sampel Firm Firm Year (2019-2024)	51	2	49	294
3	Other Financial Institution				

Population	40			
Companies that did not publish complete and consecutive financial reports from 2019–2024		7		
Sampel Firm			33	
Firm Year (2019-2024)				198
Total	106	11	95	570

Source: Author

Measurement Variable

Dependent Variable

The dependent variable in this study is *firm value*, which refers to the research conducted (Chasanah, 2018). Firm value in this study is a ratio used for investment decision-making by comparing *market value* with *book value* per share of the company. To measure firm value, *the price-to-book value (PBV)* ratio is used with equation (1):

PBV = *Market Value / Book to Equity* …… (1)

The PBV result shows the value of the company. A company is said to *be undervalued* if its PBV is less than 1 and *overvalued* if its PBV is above 1. A PBV above 1 means that the market value of the stock is greater than its book value, which means that the company is performing well/being managed well. A company that has been well-managed by its management is expected to have a PBV value of 1 or above, which indicates that the market views the company favorably, as evidenced by the company's high stock price compared to its book value.

Independent Variable

The independent variable used in this study is only one, namely ERM, so that this study can focus more on how ERM affects company value. ERM in this study refers to the research conducted by Iswahwuni et al (2010). ERM in this study refers to integrated risk management in companies to increase company value. To measure ERM in this study, a contextual analysis was conducted on *annual reports*, using the following phrases: (1) *Enterprise Risk Management*, (2) *Chief Risk Officer*, (3) *Risk Management Committee*, (4) *Risk Committee, (5) Strategic Risk Management, (6) Consolidated Risk Management, (7) Holistic Risk Management, and (8) Integrated Risk Management.* The technique used for analysis is *Python*. The results of the analysis of each item are then measured using dummy variables. The interpretation of the dummy variable is 1 if the company has implemented ERM and 0 if the company has not implemented ERM.

The Python-based contextual analysis procedure involved systematic keyword extraction from annual reports in PDF format. Each annual report was processed using a Natural Language Processing (NLP) pipeline that included text extraction, tokenization, and keyword matching against the eight predefined ERM-related phrases. To ensure the accuracy and reliability of the content analysis, a two-stage validation procedure was implemented. First, a random sample of 50 annual reports (approximately 8.77% of the total observations) was independently reviewed by two trained research assistants, yielding an inter-rater reliability coefficient (Cohen's Kappa) of 0.92, indicating excellent agreement. Second, the Python classification results were cross-validated against manually coded results for this subsample, achieving a classification accuracy of 95.3%. The binary ERM classification (1/0) captures whether a company has adopted an integrated ERM framework, consistent with the approach used by (Iswajuni et al., 2018; Liebenberg & Hoyt, 2003). While this dummy variable approach does not capture the maturity or depth of ERM implementation, it effectively distinguishes between firms that have formally adopted ERM and those that have not, which is the primary focus of this study.

Moderator Variables and Control Variables

The moderating variables in this study consist of two variables. The first is *Return on Assets (ROA),* with reference to the study by (Hermawan et al., 2025). ROA in this study refers to a company's ability to generate profits using all its assets. ROA is measured using the ratio of net income to total assets, as shown in equation (2):

ROA = Net Profit/Total Assets …… (2)

The second variable is the composition of independent directors in the company, calculated as the percentage of the total board of directors compared to the total number of independent directors. Meanwhile, the control variables used in this study consist of four variables, namely It is important to note that ROA and Dir.Ind serve dual roles in this study. In the baseline model (H1, Equation 3), Dir.Ind functions as a control variable to account for governance structure differences across firms. In the moderation model (H3, Equation 5), Dir.Ind serves as a moderating variable to test whether board independence strengthens the ERM–firm value relationship. This dual-role approach is methodologically consistent with moderated regression analysis, where the moderator is included as both a main effect (control) and an interaction term to isolate the moderating effect from the direct effect (Toothaker et al., 1994). Similarly, ROA appears as a moderator in H2 (Equation 4), while its inclusion in other models controls for profitability differences across firms. (1) SIZE, in which size refers to the amount of assets owned by the company, where SIZE is measured based on the company's total assets Ln (company assets) (2) AGE, which is measured by the length of time the company has been in operation (3) TOP1 is the highest percentage of share ownership in the company (4) LEV is leverage, which is measured by total debt/total assets.

Empirical Research Model

The research model design used to test each hypothesis is as follows:

H1: ERM has a significant positive effect on company value, tested by following the regression equation model (3):

$$PBVit = \alpha0 + \alpha1(ERMi,t) + \Sigma Control(\alpha2(SIZE\ i,t) + \alpha3(AGEi,t) + \alpha4(Top1i,t) + \alpha5(Dir.Indi,t)) + \mathcal{E}i,t \quad \ldots (3)$$

Where $_{PBVit}$ shows the value of company *(i)* in each company in year *(t)*. $_{ERMi,t}$ indicates the ERM that has been applied by each company in year t. $_{SIZEi,t}$ is the amount of assets owned by each company in year t. $_{AGEi,t}$ is the length of time each company has been established up to year t. $_{Top1i,t}$ is the highest share ownership in each company in year t. Dir.$_{Indi,t}$ is the ratio of independent directors in each company in year t.

H2: *Financial Performance* strengthens the influence of ERM on Firm Value, tested by following regression equation model (4):

$$PBVit = \alpha0 + \alpha1(ERMi,t) + \alpha2(ROAi,t) + \alpha3(ERM*ROAit) + \Sigma Control\ (\alpha4(SIZE\ i,t) + \alpha5(AGEi,t) + \alpha6(Top1i,t) + \alpha7(Dir.Indi,t)) + \mathcal{E}i,t \quad (4)$$

Where $_{ROAit}$ indicates the *return on asset* ratio of each company in year t. $_{ERM*ROAit}$ is the moderating interaction between ERM and ROA of each company in year t. Meanwhile, other variables are as explained in equation (3) above.

H3: Independent directors strengthen the influence of ERM on firm value, following the regression equation model (5):

$$_{PBVit} = \alpha0 + {}_{\alpha1}(ERMi,t) + {}_{\alpha2}(Dir._{Indi,t}) + {}_{\alpha3}(ERM*Dir.Indi,t + \Sigma Control\ ({}_{\alpha4}(SIZEi,t) + {}_{\alpha5}(AGEi,t) + \alpha6(Top1i,t) + \alpha7(Dir.Indi,t)) + \mathcal{E}i,t \quad (5)$$

Where Dir.$_{Indi,t}$ is the ratio of independent directors in each company in year t and Dir.$_{Ind*ROAit}$ is the interaction between ERM and Independent Directors in each company in year t. Meanwhile, other variables have been explained in equation (3) above.

RESULTS AND DISCUSSION

Results

Sample Characteristics and Study Context

Before discussing the results of the research model regression test, let us first review he importance of the sample characteristics used in this study, and how firm value, proxied by PBV, and the application of ERM in the financial sector in Indonesia from 2019 to 2024. Financial Sector is selected as the research object to examine the effect of Enterprise Risk Management (ERM) on firm value because this sector is characterized by a high level of risk and operates under strict regulatory supervision. As financial intermediary institutions, banks face various types of

risks, including credit risk, liquidity risk, market risk, operational risk, and compliance risk, making the implementation of ERM highly relevant. Furthermore, the selection of the banking sector is reinforced by the regulation issued by the Financial Services Authority (OJK), namely OJK Regulation No.18/POJK.03/2016, which mandates commercial banks to implement risk management effectively, both on an individual and consolidated basis. This regulatory requirement makes the banking sector an appropriate context for assessing the extent to which ERM implementation can enhance investor confidence, strengthen corporate governance, and ultimately increase firm value.

Based on the table below, we can see that the highest number of companies with a firm value (PBV) > 1 are in the banking sector, with 156 sample data points or 53.06%. However, the highest percentage of companies with a firm value (PBV) > 1 are in the other financial institutions sector, with 55.56%. Overall, the company value (PBV) > 1 in the financial sector in Indonesia is 54.21%, which shows that companies in the financial sector in Indonesia have a good company value (Firm Value) of 54.21%.

Table 2
Firm Value (PBV) of Financial Sector Companies Listed on the IDX from 2019 to 2024

No	Description	Sample Size	PBV <1	PBV >1	Percentage	
1	Insurance	78	35	43	44.87	55.13
2	Banking	294	138	156	46.94	53.06
3	Financial Institutions Others	198	88	110	44.44	55.56
	Total	570	261	309	45.79	54.21

Source: Author

Based on table 3 below, the largest application of ERM is in the banking sector, with 93.20% of companies implementing ERM, followed by the insurance sector with 74.36% implementing ERM. OJK Regulation POJK No.18/POJK.03/2016 concerning Risk Management for Commercial Banks requires banks to identify, measure, monitor, and control material risks in an integrated manner with risk management and GCG (Good Corporate Governance) systems, supported by the COSO ERM or ISO 31000 framework.

This shows that OJK regulations require the banking sector to implement ERM. Based on this data, 93.20% of banks in Indonesia have implemented these OJK regulations. In contrast to the results found in other financial institutions, where ERM implementation is only 29.29%, this shows that other financial institutions have not yet fully implemented ERM because ERM requirements are not as strict as those for companies in the banking sector. It is possible that the OJK regulations only require the banking sector to implement ERM, not other financial institutions.

Table 3
Application of ERM in Financial Sector Companies Listed on the IDX in 2019-2024

No	Description	Number of Samples	ERM=0	ERM=1	Percentage	
1	Insurance	78	20	58	25.64	74.36
2	Banking	294	20	274	6.80	93.20
3	Other Financial Institutions	198	140	58	70.71	29.29
	Total	**570**	**180**	**390**	**31.58**	**68.42**

Source: Author

Discussion

The descriptive statistics of the research variables used in this study. Based on table 4 below, we can see that the firm value measured in this study, the average PBV, is 2.0771, which indicates that PBV>1, meaning that the value of financial sector companies in Indonesia is considered good by the public or investors. Supported by Table 1 above, it shows that the firm value (PBV) is 54.21%, which indicates a good result. The table above also shows that ERM is assessed using a 1/0 dummy

variable, and the average implementation of ERM in the companies studied is 68.42%, meaning that 68.42% of companies in Indonesia have implemented ERM. Meanwhile, the ROA of companies is at a mean of 0.023, which shows that the profitability ratio, indicated by the ratio of net income to average assets, has increased by 2.31%. The composition of independent directors in the board of directors is 57.75%. The lowest composition is 25% and the highest is 75%, meaning that the composition of independent directors in the companies studied shows a large composition as supervisors in the company.

Table 4
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PBV	570	0.00	9.75	2.0771	2.28095
ERM	570	0.00	1.00	0.6842	0.46524
ROA	570	-0.38	0.91	0.0231	0.13246
ERM*ROA	570	-0.18	0.91	0.0183	0.11088
DIRIN	570	0.25	0.75	0.5771	0.13531
ERM*DIRIN	570	0.00	0.75	0.4267	0.30355
SIZE	570	2.97	14.70	9.1214	2.41944
LEV	570	0.00	17.07	2.9876	2.84269
AGE	570	2.00	111.00	39.3070	17.76824
TOP1	570	0.31	73.00	1.4998	7.12725
Valid N (listwise)	570				

Source: Author

Research Regression Model Test Analysis

The regression model test used in this study uses panel data by conducting tests (1) Chow test (2) Lagrange Multiplier test (3). Hausman test. By considering 3 models in selecting the best significant test results, namely by using models (1) Common Effect Model, (2) Fixed Effect Model and (3) Random Effect Model. Prior to the main regression analysis, classical assumption tests were conducted to ensure the validity of the estimation results. The normality of residuals was assessed using the Jarque-Bera test, while heteroscedasticity was tested using the Breusch-Pagan test. Multicollinearity was evaluated through Variance Inflation Factor (VIF) analysis, with all VIF values below 10, indicating no severe multicollinearity among the independent variables. Autocorrelation was tested using the Durbin-Watson statistic. In cases where heteroscedasticity was detected, robust standard errors (White's heteroscedasticity-consistent standard errors) were employed to ensure the reliability of the coefficient estimates and their corresponding t-statistics. The use of Fixed Effect and Random Effect panel models inherently addresses individual-specific heterogeneity, thereby mitigating potential omitted variable bias (Wooldridge, 2002).

The Effect of *Enterprise Risk Management* (ERM) on Firm Value

Based on Table 5, Panels A1 and A2 are used to answer H1, namely: The effect of ERM on company value. Panel A1 was tested without using control variables, while panel A2 included several control variables in the test. Based on the test results, it can be stated that ERM has a significant negative effect on company value (PBV), panel A1 (coefficient = -0.4188, t = -1.9212). and Panel A2 (coefficient = -0.9192, t = -3.9142), so hypothesis 1 is rejected. In general, the more ERM is implemented, the higher the company value will be, but in this study, the regression test results show that this is not the case.

Table 5
Partial Regression Model Test of the Effect of Enterprise Risk Management (ERM) on Firm Value

Panel A1. ERM Test without Control Variables
Dependent Variable PBV

	Parameter	Std. Err.	T-stat	P-value
const	2.3636	0.2448	9.6537	0.0000
ERM	-0.4188	0.2180	-1.9212	0.0552
F-statistic:	3.6910			
R-squared:	0.0065			
P-value	0.0552			
Using the *Random Effect* Model (REM)				

Panel A2. ERM test with control variables

	Dependent Variable PBV			
	Parameter	Std. Err.	T-stat	P-value
const	5.3806	0.5800	9.2766	0.0000
ERM	-0.9192	0.2348	-3.9142	0.0001
Ln_SIZE	-0.1329	0.0518	-2.5671	0.0001
LEV	0.0679	0.0438	1.5491	0.1219
AGE	-0.0177	0.0056	-3.1749	0.0016
TOP1	-1.2650	0.5587	-2.2644	0.0239
F-statistic:	13.459			
R-squared:	0.1074			
P-value	0.0000			
Using the *Fixed Effect* Model (FEM)				

Source: Author

These test results differ from those of studies conducted by Faisal et al. (2021), Ali et al. (2019), Iswajuni et al. (2018), which state that there is a significant positive relationship and influence on company value. Meanwhile, in their research, Horvey & Ankamah (2020) state that ERM has a significant positive effect on company value. Enterprise Risk Management needs to be implemented in both financial and non-financial companies because companies that practice ERM tend to perform better than those that do not. Floria and Leoni (2017) state that the results of their research show that companies with a more advanced level of ERM implementation have higher performance, both in terms of financial performance and market valuation.

The results of this study are consistent with previous findings, which indicate that ERM has a significant negative effect on company value. Similarly, research by Li et al (2014) states that the implementation of ERM has no significant effect on company value. Meanwhile, research by Qalby et al. (2023) states that there is no significant effect on company value, but in their research, they state that the variable of family ownership has a significant positive effect on company value (Firm Value). Agustina & Baroroh (2016) stated that ERM has a significant negative effect on company value or profitability.

These findings indicate that the implementation of ERM is not an attraction for investors in investing in company shares. The market considers that the implementation of ERM is not a determining factor in making investments. Investors are more interested in other financial information than the implementation of ERM in the financial sector, even though the implementation of ERM in the banking sector is a requirement in the daily operations of the banking sector, namely the obligation to comply with OJK POJK No. 18/POJK.03/2016 concerning Risk Management for Commercial Banks, whereby banks are required to identify, measure, monitor, and control material risks in an integrated manner with the risk management system and GCG (Good Corporate Governance). According to the researcher's observations, ERM is risk-reducing, i.e., it reduces uncertainty, prevents losses, and reduces volatility of results, rather than return- enhancing, i.e., it is a driver for increasing expected returns. The market reacts more when ERM is integrated with a high ROA value than when ERM is integrated with a low ROA value to obtain a high company value.

From a theoretical perspective, the significant negative effect of ERM on firm value can be explained through several lenses. First, signaling theory suggests that while ERM disclosure

signals risk awareness, investors may interpret extensive risk management disclosures as an indication of higher underlying risk exposure rather than superior risk mitigation capability (Spence, 1978). Second, the cost-benefit framework proposed by Baxter et al. (2013) suggests that the direct costs associated with ERM implementation—including dedicated personnel, technology infrastructure, and compliance expenditures—may initially outweigh the perceived benefits, particularly when ERM maturity is still developing. Third, from an agency theory perspective, ERM implementation may impose constraints on managerial discretion that investors perceive as reducing the firm's strategic flexibility (Jensen & Meckling, 1976). In the Indonesian financial sector context, where ERM compliance is largely regulatory-driven (OJK POJK No. 18/POJK.03/2016), the market may perceive ERM as a compliance burden rather than a value-creating strategic initiative.

The role of Firm Performance (ROA) in strengthening the Influence of Enterprise Risk Management (ERM) on Firm Value

Table 6 answers the H2 test: The role of Firm Performance (ROA) in moderating the Effect of Enterprise Risk Management (ERM) on Firm Value. The regression test results in Table 6 indicate that ERM has a significant negative effect on firm value (coefficient = -0.4165, t = 1.8667). However, the regression test results on the interaction between ROA and ERM shows a significant positive effect on firm value (coefficient = 5.1588, t = 3.6768), with a very good significance level at a p-value of 0.0003. The results of the hypothesis test state that company performance positively moderates the significant effect of ERM on company value, so hypothesis 2 is accepted.

Table 6

Partial Regression Model Test of the Moderating Effect of Firm Performance (ROA) on the Effect of Enterprise Risk Management (ERM) on Firm Value (Firm Value)

	Dependent Variable PBV			
	Parameter	**Std. Err.**	**T-stat**	**P-value**
const	6.3915	0.9685	6.5992	0.0000
ERM	-0.4165	0.2231	-1.8667	0.0625
ROA	-1.0624	0.8600	-1.2353	0.2172
ERM*ROA	5.1588	1.4031	3.6768	0.0003
Ln_SIZE	-0.1253	0.0839	-1.4936	0.1359
LEV	0.0981	0.0499	1.9658	0.0498
AGE	-0.024	0.0110	-2.1818	0.0295
TOP1	-3.0155	0.8601	-3.5058	0.0005
F-statistic:	6.7319			
R-squared:	0.0774			
P-value	0.0000			
Using the *Random Effect* Model (REM)				

Source: Author

This result is in line with the conclusion in hypothesis 1, where investors are not interested in the application of ERM in assessing companies, but the application of ERM will be more beneficial and provide value if it interacts with company performance, which in this study is proxied by ROA. In companies with low ROA, an increase in ERM causes a decrease in PBV, while in companies with high ROA, the effect of ERM increases company value. ERM does not automatically increase company value, as proven by hypothesis 1, but ERM becomes relevant if it supports strong company financial performance. This is in line with the ERM strategy in the COSO ERM implementation framework, which states that ERM is effective in improving company performance.

These findings indicate that the effect of ERM on company value becomes stronger as company performance (ROA) increases. The implementation of ERM will be appreciated by the

market in companies with high performance, thereby causing company value to also increase. ERM does not work alone, but supports company performance to create company value. Previous studies have not examined the moderating effect of company performance and ERM on company value. However, Hermawan et al (2025) examined the effect of ERM on company value mediated by company performance. Their findings revealed that financial performance as a mediating variable acts as an intermediary variable that strengthens the relationship between ERM, IC, IOS, and company value. Meanwhile, Riyani et al. (2022) stated that company performance was unable to mediate the relationship between risk management, intellectual capital, and innovation on company value. Subagyo and Saraswati (2022) stated that financial performance has a positive and significant effect on company value, but cannot mediate the relationship between ERM and company value. Agustina & Baroroh (2016) stated that company performance cannot mediate the relationship between ERM and company value.

This finding can be further explained through the lens of signaling theory (Spence, 1978). In companies with high ROA, the combination of strong financial performance and robust ERM implementation sends a credible positive signal to the market, indicating that the firm possesses both the capability to generate profits and the discipline to manage risks systematically. Conversely, in companies with low ROA, ERM implementation may signal that the firm is allocating scarce resources toward risk management infrastructure rather than revenue-generating activities, thereby reducing investor confidence and firm value. From an agency theory perspective Jensen & Meckling (1976), high ROA firms demonstrate effective managerial stewardship, and the addition of ERM reinforces investor confidence that management is aligned with shareholders' wealth-maximizing objectives. In contrast, low-performing firms implementing ERM may trigger investor concerns about management prioritizing compliance over value creation.

The Impact of Independent Directors on the Influence of Enterprise Risk Management (ERM) on Firm Value

Table 7 answers test H3: The role of Independent Directors (DIRIN) strengthens the influence of Enterprise Risk Management (ERM) on Firm Value. The results of the interaction test between Independent Directors and ERM have no significant effect on firm value. (coefficient = 2.3762, t = 1.4661), Hypothesis 3 is rejected.

Table 7

Partial Regression Model Test of the Moderating Effect of Independent Directors on the Influence of Enterprise Risk Management (ERM) on Firm Value

	Dependent Variable PBV			
	Parameter	**Std. Err.**	**T-stat**	**P-value**
const	5.0705	0.8448	6.0016	0.0000
ERM	-2.3990	0.8789	-2.7296	0.0065
DIRIN	0.7519	1.2089	0.6220	0.5342
ERM*DIRIN	2.3762	1.6207	1.4661	0.1432
LN_SIZE	-0.1466	0.0519	-2.8266	0.0049
LEV	0.0456	0.0441	1.0338	0.3017

AGE	-0.0193	0.0056	-3.4381	0.0006
TOP1	-1.1005	0.5579	-1.9727	0.0490
F-statistic:	11.044			
R-squared:	0.1219			
P-value	0.0000			
Using the *Fixed Effect* Model (FEM)				

Source: Author

These results indicate that the role of independent directors does not strengthen ERM to increase firm value. Independent directors are not the main determinants of the success of ERM in increasing firm value. The role of independent directors as supervisors is not sufficient to influence the operational activities of ERM. ERM is usually controlled by top management in its implementation.

The insignificant moderating effect of board independence on the ERM–firm value relationship can be understood through the theoretical distinction between symbolic and substantive governance roles. Westphal & Zajac (1998) argued that independent directors may serve a primarily symbolic function, providing legitimacy to the board composition without substantively influencing operational decision-making. In the Indonesian context, this "rubber-stamp board" phenomenon may be particularly relevant, where independent directors fulfill regulatory requirements but lack the industry-specific expertise or authority to meaningfully oversee ERM implementation. Furthermore, resource dependence theory suggests that the effectiveness of independent directors depends on their access to relevant information and their ability to provide strategic resources (Reitz et al., 1979). ERM is typically managed by specialized risk management committees and executed by operational management, limiting the extent to which board-level independence can influence ERM effectiveness. These findings align with Lew et al. (2018), who found that a larger proportion of external independent directors did not significantly affect company performance.

These test results are not in line with the research conducted by Winarsih Winarsih et al. (2024), which states that there is an influence of independent boards and institutional ownership on company value. However, the number of boards does not affect company value. Similarly, research conducted by Ristiyana et al. (2024) states that the Independent Board of Directors has a significant positive influence on Firm Value. Karamoy & Tulung (2020) stated that managerial ownership, institutional ownership, and the composition of independent directors, both partially and simultaneously, do not have a significant effect on stock prices in the non-bank financial industry. Lew et al. (2018) in their research results showed that the separation of the positions of CEO and chairman encourages better company performance.

Table 8
Simultaneous Regression Model Test

	Dependent Variable PBV			
	Parameters	**Std. Err.**	**T-stat**	**P-value**
const	4.7856	0.8297	5.7679	0.0000
ERM	-2.4235	0.8620	-2.8114	0.0051
ROA	-0.1363	1.2219	-0.1116	0.9112

ERM*ROA	4.1908	1.4689	2.8529	0.0045
DIRIM	0.7823	1.1856	0.6598	0.5096
ERM*DIRIN	2.2427	1.5889	1.4115	0.1587
Ln_SIZE	-0.1414	0.0511	-2.7676	0.0058
LEV	0.0391	0.0434	0.9010	0.3680
AGE	-0.0183	0.0055	-3.3261	0.0009
TOP1	-0.8373	0.5494	-1.5241	0.1281
F-statistic:	11.754			
R-squared:	0.1601			
P-value	<0.0000			

Using the Fixed Effect Model (FEM)

Source: Author

Table 8 in this study shows the results of simultaneous testing of all variables used in the study. The test results are consistent with the partial tests conducted. In the partial test, hypothesis 1 was rejected, as was the simultaneous test, which showed that ERM had a significant negative effect on company value (coefficient = -2.4235, t = 2.8114), indicating that hypothesis 1 was rejected. Hypothesis 2 was accepted in the partial test, and the results of the simultaneous test of hypothesis 2 show that the interaction of company performance (ROA) strengthens ERM on company value (coefficient = 4.1908, t = 2.8529), meaning that hypothesis 2 is accepted. Meanwhile, hypothesis 3, which was tested partially, showed consistency in the simultaneous test, where independent directors did not strengthen the significant positive effect of ERM on company value (coefficient = 2.2427, t =1.4115), so hypothesis 3 is rejected

A noteworthy observation from the comparison of partial and simultaneous regression results is the change in the ERM×ROA interaction coefficient from 5.1588 (Table 6, partial model) to 4.1908 (Table 8, simultaneous model). This reduction of approximately 18.8% suggests that when all moderating variables are included simultaneously, the explanatory power of ROA moderation is partially absorbed by the inclusion of the Dir.Ind interaction term. However, the ERM×ROA interaction remains statistically significant (p = 0.0045) in the simultaneous model, confirming the robustness of H2. The simultaneous model also yields a higher R-squared value (0.1601) compared to the partial models (H1: 0.1074; H2: 0.0774; H3: 0.1219), indicating that the combined specification provides superior explanatory power for firm value variation.

An important contextual factor that warrants discussion is the impact of the COVID-19 pandemic (2020–2022), which falls within the study period of 2019–2024. The pandemic created unprecedented disruptions in the financial sector, including significant credit risk deterioration, liquidity pressures, and heightened market volatility (Demirgüç-Kunt et al., 2021). During this period, firms with robust ERM frameworks may have been better positioned to identify emerging risks and implement timely mitigation strategies. However, the negative direct effect of ERM on firm value observed in this study suggests that investors may not have fully recognized the protective value of ERM during the crisis. This is consistent with the view that the benefits of ERM become apparent only when integrated with strong financial performance, as demonstrated by the significant positive interaction effect of ERM and ROA. The pandemic period thus provides a compelling natural experiment that reinforces the study's central finding: ERM alone is insufficient to enhance firm value, but its combination with strong financial performance creates meaningful value for shareholders.

CONCLUSION

Based on financial sector companies in Indonesia during 2019–2024, this study concludes that ERM has a significant negative effect on company value, indicating that ERM alone is not a primary determinant of value. However, company performance (ROA) strengthens the influence of ERM on company value, suggesting that ERM creates greater value when supported by strong financial performance. In contrast, independent directors do not strengthen this relationship, as ERM implementation is primarily managed by top management.

Practically, companies should integrate ERM with profitability and operational strategies to generate measurable financial benefits, while the OJK may encourage performance-oriented ERM reporting. This study contributes by emphasizing that ERM should be linked to company performance rather than viewed as an independent signal of value. The study also acknowledges potential endogeneity and uses Fixed Effect Models to control firm-specific heterogeneity, although future research may apply IV or GMM approaches. Future studies should expand the sample beyond the financial sector, use alternative measures such as Tobin's Q, adopt different ERM measures, and consider alternative performance indicators such as ROE.

ACKNOWLEDGEMENT

The authors would like to express their gratitude to all parties who provided support and assistance throughout the research and publication process. The authors also appreciate the institutions and data sources that contributed to the completion of this study.

AUTHOR CONTRIBUTION STATEMENT

The authors contributed to the study through conceptualization, methodology, data collection and analysis, interpretation of results, manuscript preparation, critical revision, and final approval of the manuscript. All authors have read and approved the final version of the manuscript.

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