

Enterprise Risk Management, Agency Costs, and Financial Performance Volatility: Evidence from Indonesian Public Companies

Andi Kusuma Negara¹, Lena Erdawati², Dede Sunaryo³

^{1,2,3}Universitas Muhammadiyah Tangerang, Indonesia

Email: andikasumanegara75@umt.ac.id

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ABSTRACT

This study investigates the relationship between Enterprise Risk Management (ERM) implementation, agency costs, and financial performance volatility among publicly listed companies on the Indonesia Stock Exchange (IDX). Using a balanced panel dataset of 57 IDX-listed companies during 2019–2023, resulting in 285 firm-year observations, this study employs fixed-effects panel regression with firm and year fixed effects and clustered standard errors at the firm level. ERM implementation is measured using a composite ERM Index developed based on the COSO 2017 framework, while financial performance volatility is assessed through the three-year rolling standard deviation of Return on Assets (ROA), Return on Equity (ROE), and Tobin's Q. Agency costs are measured using the Agency Cost Index (ACI) as a mediating variable. The findings show that ERM implementation is negatively associated with agency costs ($\beta = -0.374$, $p < .001$), indicating that stronger ERM practices are related to lower agency-related inefficiencies. Furthermore, agency costs are positively associated with ROA volatility ($\beta = 0.491$, $p < .001$) and ROE volatility ($\beta = 0.428$, $p < .001$). The mediation analysis indicates that agency costs statistically mediate the relationship between ERM implementation and accounting-based financial performance volatility, as the direct effects of ERM on ROA and ROE volatility become insignificant after including ACI in the models. In addition, ERM implementation shows a direct negative association with Tobin's Q volatility ($\beta = -0.218$, $p < .01$), although the agency-cost-mediated pathway for Tobin's Q volatility is not examined in this study. These findings extend ERM literature by highlighting agency cost reduction as a potential mechanism through which ERM relates to organizational stability, particularly in an emerging-market context. The findings also suggest that firms should view ERM not only as a compliance practice but as a governance capability that supports monitoring, accountability, and financial stability. However, the observational panel design limits causal interpretation, and future research should employ stronger identification strategies and alternative agency cost measures to further examine these relationships.

Keywords: agency cost theory; enterprise risk management; financial performance volatility; Indonesia; Jensen and Meckling

1. Introduction

Enterprise Risk Management (ERM) has become an essential governance mechanism for organizations facing increasing uncertainty, complex business risks, and rapidly changing economic conditions. Unlike traditional risk management approaches that address individual risks separately, ERM integrates risk identification, assessment, response, and monitoring into strategic decision-making processes. The Committee of Sponsoring Organizations of the Treadway Commission (COSO, 2017) emphasizes that ERM is not merely a compliance-oriented activity but an organizational capability that supports value creation, preservation, and realization. Recent ERM literature indicates that research attention has gradually shifted from examining whether firms adopt ERM toward understanding how the quality, maturity, and strategic integration of ERM implementation influence organizational outcomes (Anton & Nucu, 2020; Horvey & Odei-Mensah, 2023; Jaber & Shah, 2024).

The importance of ERM became increasingly evident during periods of economic disruption, particularly during the COVID-19 pandemic, when firms faced substantial uncertainty in operational activities, financial conditions, and market expectations. Recent studies suggest that firms with stronger risk governance capabilities tend to demonstrate greater resilience during crisis periods because ERM provides a structured approach for identifying risks, coordinating responses, and supporting strategic adaptation (Horvey & Odei-Mensah, 2023; Fung et al., 2025). However, empirical evidence remains mixed regarding the mechanisms through which ERM contributes to organizational stability. Existing studies have largely focused on whether ERM adoption improves firm value, profitability, or risk outcomes, while less attention has been given to explaining the internal governance processes through which ERM generates these benefits.

Agency Cost Theory provides an important theoretical perspective for explaining how ERM may influence organizational outcomes. Jensen and Meckling (1976) argue that the separation between ownership and control creates potential conflicts between shareholders as principals and managers as agents. Because managers may pursue decisions that do not fully align with shareholder interests, firms experience agency costs in the form of monitoring costs, bonding costs, and residual losses. These costs may reduce organizational efficiency, encourage ineffective resource allocation, and increase uncertainty in firm performance. Therefore, governance mechanisms that improve monitoring quality, increase managerial accountability, and reduce information asymmetry may contribute to lower agency costs and more stable organizational outcomes (Jensen & Meckling, 1976; Fama & Jensen, 1983; Eisenhardt, 1989).

From this perspective, ERM can be viewed not only as a risk management framework but also as a governance mechanism that may reduce agency conflicts. A comprehensive ERM system provides boards and managers with integrated risk information, establishes clearer risk responsibilities, and strengthens alignment between managerial decisions and organizational objectives (Nocco & Stulz, 2006; Hoyt & Liebenberg, 2011). Previous studies have demonstrated that ERM quality is associated with improved firm value and performance outcomes. Hoyt and Liebenberg (2011) found that ERM adoption was positively associated with firm value among insurance companies, while Baxter et al. (2013) showed that higher ERM quality was related to stronger financial performance and resilience during financial crises. Grace et al. (2015) further demonstrated that ERM quality contributes to lower insolvency risk and improved organizational outcomes.

Recent research continues to support the importance of ERM while highlighting the need to understand its underlying mechanisms. Malik et al. (2020) found that ERM effectiveness is strengthened by effective board-level risk committees, suggesting that governance structures influence how ERM creates value. Similarly, Horvey and Odei-Mensah (2023) identified measurement inconsistency and limited understanding of ERM mechanisms as important challenges in the existing literature. Fung et al. (2025) further showed that mature ERM frameworks supported organizational resilience during the COVID-19 crisis. However, these studies primarily examine the direct relationship between ERM and firm performance or resilience. The specific role of agency cost reduction as a mechanism linking ERM implementation to financial performance stability remains insufficiently explored.

This limitation is particularly important because ERM requires substantial organizational resources, and understanding why ERM creates value is critical for corporate decision-makers and regulators. Although ERM may reduce risk exposure directly through better risk identification and response processes, its contribution may also occur indirectly through improved governance quality. When ERM strengthens monitoring systems, reduces managerial discretion, and improves accountability, firms may experience lower agency costs and more stable financial outcomes. However, empirical evidence testing this mediation mechanism remains limited, especially in emerging-market contexts where ownership concentration and governance challenges may intensify agency problems.

Indonesia provides a relevant setting for investigating this relationship. As one of the largest emerging economies in Southeast Asia, Indonesia has experienced significant development in capital market regulation and corporate governance practices. Companies listed on the Indonesia Stock Exchange (IDX) operate across diverse industries with different levels of risk exposure, governance maturity, and ownership structures. These characteristics create meaningful variation in ERM implementation and agency cost environments. Previous studies in Indonesia have documented the relationship between corporate governance, risk management, and firm performance, particularly during the COVID-19 period (OJK, 2022; Natalia et al., 2024). However, evidence regarding whether agency costs explain the relationship between ERM implementation and financial performance volatility remains limited.

Financial performance volatility represents an important organizational outcome because sustainable performance depends not only on achieving high returns but also on maintaining stability and predictability over time. Unlike traditional performance indicators that focus on performance levels, volatility captures fluctuations in operational performance, shareholder returns, and market valuation. From an agency perspective, excessive managerial discretion, inefficient investment decisions, and weak monitoring mechanisms may contribute to unstable financial outcomes (Minton & Schrand, 1999; Tufano, 1996). Therefore, examining financial performance volatility provides a broader understanding of whether ERM contributes to organizational stability beyond improving average financial performance.

Based on these theoretical arguments, this study investigates the relationship between ERM implementation, agency costs, and financial performance volatility among companies listed on the Indonesia Stock Exchange (IDX). Specifically, this study addresses three research objectives. First, this study examines whether ERM implementation is associated with lower agency costs among IDX-listed companies. Second, this study investigates whether agency costs are associated with financial performance volatility across different dimensions, including ROA volatility, ROE volatility, and Tobin's Q volatility. Third, this study examines whether agency costs mediate the relationship between ERM implementation and financial performance volatility.

This study contributes to the existing literature in three ways. First, it extends ERM research by examining agency costs as an explanatory mechanism rather than focusing only on the direct relationship between ERM and firm performance. Second, it provides empirical evidence from an emerging-market context where governance characteristics may influence the effectiveness of ERM implementation. Third, it expands the understanding of ERM outcomes by examining financial performance volatility as an indicator of organizational stability during a period of economic disruption.

The conceptual framework illustrating the proposed relationship among ERM implementation, agency costs, and financial performance volatility is presented in Figure 1.

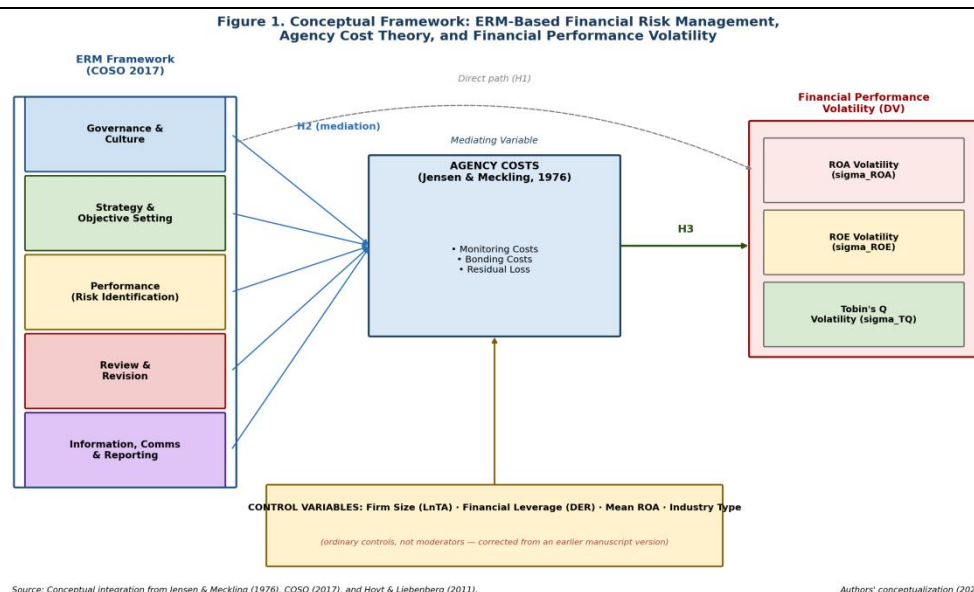


Figure 1. Conceptual Framework: ERM-Based Financial Risk Management, Agency Cost Theory, and Financial Performance Volatility

Source: Conceptual integration from Jensen & Meckling (1976), COSO (2017), and Hoyt & Liebenberg (2011). Authors' conceptualization (2025).

2. Method

Research Design, Sample, and Data

This study employs a quantitative panel data research design using secondary archival data. The target population comprises non-financial companies listed on the Indonesia Stock Exchange (IDX) during 2019-2023 that (a) had complete annual report disclosure for the full five-year window, (b) were not undergoing delisting, merger, or government recapitalization, and (c) disclosed sufficient information to compute the ERM Index and Agency Cost Index. Financial companies were excluded because their risk management disclosures are subject to distinct Basel III/Basel IV regulatory requirements that would confound ERM measurement. After applying these criteria, the final sample comprises 57 companies with complete data for all five years, yielding 285 firm-year observations (57 x 5) across manufacturing (31.6%), consumer goods and retail (22.8%), energy and mining (19.3%), technology and telecommunications (15.8%), and infrastructure (10.5%). Because the inclusion criteria required complete annual report disclosure for the full 2019-2023 window, the panel is balanced: every one of the 57 sampled firms contributes exactly five annual observations. The 2019-2023 window was selected to capture the COVID-19 shock and recovery, providing naturally occurring variation in financial performance; as noted in Section 1, this variation supports descriptive and associational analysis rather than causal identification of ERM's effect.

Variable Operationalization

Independent Variable: ERM Implementation Index

The ERM Implementation Index (ERM_IDX) is a composite score computed from content analysis of annual reports and governance disclosures, scored on a scale of 0-100 across five COSO 2017 dimensions. Governance and Culture was scored based on the presence and quality of risk management committee charters, board-level risk competency, and tone-at-the-top risk culture indicators (maximum 25 points). Strategy and Objective-Setting assessed whether risk appetite statements were explicitly linked to strategic objectives (maximum 20 points). Performance dimension scored the quality of risk identification, assessment methodology, and response planning (maximum 25 points). Review and Revision assessed whether the ERM system was subject to independent

evaluation and adaptation (maximum 15 points). Information, Communication, and Reporting assessed the comprehensiveness of internal and external risk reporting (maximum 15 points). Inter-rater reliability for the content analysis was established through two independent coders, achieving Cohen's kappa = 0.83, indicating strong agreement.

Mediating Variable: Agency Cost Index

The Agency Cost Index (ACI) is operationalized as the ratio of Selling, General, and Administrative (SG&A) expenses to total sales revenue, a widely used proxy for agency costs in the empirical literature (Ang et al., 2000; Singh & Davidson, 2003; Ozkan, 2007). Higher ACI values indicate greater managerial discretionary expenditure relative to revenue-generating activities, consistent with higher agency costs. This proxy captures discretionary expenditure broadly and does not separately observe Jensen and Meckling's (1976) monitoring, bonding, and residual-loss components individually; it should accordingly be read as a composite indicator consistent with, rather than a direct decomposition of, their theoretical framework (see Section 5, Discussion, for further treatment of this limitation). As a robustness check, asset utilization ratio (total sales / total assets) was also employed as an inverse proxy for agency costs, following Ang et al. (2000).

Dependent Variables: Financial Performance Volatility

Three financial performance volatility measures are employed. ROA Volatility (σ_{ROA}) is the rolling 3-year standard deviation of Return on Assets (Net Income / Total Assets). ROE Volatility (σ_{ROE}) is the rolling 3-year standard deviation of Return on Equity (Net Income / Total Equity). Tobin's Q Volatility (σ_{TQ}) is the rolling 3-year standard deviation of Tobin's Q, computed as (Market Capitalization + Total Debt) / Total Assets. The 3-year window was selected to capture medium-term performance stability while remaining short enough to reflect the COVID-19 shock and recovery separately from the pre-pandemic baseline; shorter windows would more closely track single-year shocks, while longer windows would smooth over the shock period entirely. A rolling 3-year standard deviation for the 2019 and 2020 firm-year observations requires financial data from 2017 and 2018 (and 2018-2019 respectively) that precede the stated 2019-2023 sample window. This has not yet been addressed in the manuscript and must be resolved by the authors: either the underlying financial statement data extend back to 2017 for the purpose of constructing these rolling statistics (in which case this should be stated explicitly, since it differs from the sample period described in Section 3.1), or the 2019 and 2020 volatility values were constructed using a shorter, non-3-year window (in which case this inconsistency in window length across years should be disclosed and its implications for comparability discussed), or these two years should be excluded from the volatility-based analyses. This is a data-provenance question that cannot be resolved without the authors' original dataset and computation records.

Control Variables

Control variables include firm size (LnTA: natural log of total assets), financial leverage (DER: total debt / total equity), profitability level (mean ROA over the 2019-2023 observation window), and industry sector dummy variables. Year fixed effects are included to absorb macroeconomic shocks including the COVID-19 pandemic. These are ordinary control variables included to isolate the ERM-ACI-volatility relationships of interest; they are not moderators, and Figure 1 has been corrected accordingly (see Section 4.2), since an earlier version of that figure labeled this same set of variables as a moderator box.

Analytical Method

All hypotheses were tested using fixed-effects panel regression estimated via ordinary least squares with clustered standard errors at the firm level to address heteroscedasticity and within-firm autocorrelation. Firm and year fixed effects were estimated via the within (demeaning) transformation rather than dummy-variable (LSDV) inclusion; readers should interpret the reported R^2 as the within R^2 rather than the overall R^2 . The Hausman test was applied to select between fixed- and random-

effects specifications; results consistently favored fixed effects (chi-square = 28.43, $p < .001$). Mediation hypotheses (H2) were tested using the Baron and Kenny (1986) four-step procedure, supplemented by bootstrapped indirect effect estimates (5,000 iterations) for formal significance testing of the mediated pathway following Hayes (2018). The regression model specification is: $\text{Volatility}_{it} = \alpha + \beta_1 \text{ERM_IDX}_{it} + \beta_2 \text{ACI}_{it} + \beta_3 \text{Controls}_{it} + \mu_i + \lambda_t + \epsilon_{it}$, where μ_i represents firm fixed effects and λ_t represents year fixed effects.

A significant, currently unresolved specification problem must be flagged here rather than smoothed over. Mean ROA is defined in Section 3.2.4 as the firm's average ROA over the full 2019-2023 window, which makes it, by construction, constant within each firm across all five years of the panel. Under within-firm fixed-effects (demeaning) estimation, any regressor that is perfectly time-invariant within a firm is demeaned to exactly zero and cannot yield an estimable coefficient; it is absorbed by the firm fixed effect rather than separately identified. Table 2, however, reports estimated coefficients and standard errors for Mean ROA in every model. These two facts are not simultaneously possible under the estimation procedure as described. This is not a wording or presentation issue and cannot be resolved by rephrasing; the authors must clarify the actual specification used, for example, whether Mean ROA was in fact included only in a separate between- or pooled-effects specification, whether it was interacted with year indicators to create within-firm time variation, whether the within-firm fixed-effects claim in Section 3.3 is inaccurate and the reported models are actually random-effects or pooled OLS, or whether "Mean ROA" is mislabeled and the variable actually varies by firm-year (for example, a trailing rather than full-sample average). The same clarification is needed for the industry-sector dummy variables, which, like Mean ROA, are time-invariant within firms and cannot be separately estimated alongside firm fixed effects unless they are interacted with time-varying elements or the model in fact uses a different estimator than the one described. Until this is resolved and the exact estimation commands are reported, Table 2's coefficients on Mean ROA and any industry dummies should not be treated as reliable.

Common method and model-fit documentation: the R^2 , adjusted R^2 , and F-statistics reported for Models 1-6 in Table 2 have not yet been independently reconciled using the standard algebraic relationships that link these quantities; a cluster-robust F-statistic is not necessarily linked to R^2 through the same identities as the conventional OLS F-statistic, so this should not be assumed resolved by ordinary-least-squares algebra alone. The authors should report the exact Stata estimation command used for each model, the definition of every R^2 statistic, the numerator and denominator degrees of freedom for each F-test, the number of clusters, and, preferably, the complete regression output as supplementary material. The manuscript should also state explicitly whether the bootstrapped indirect effects and confidence intervals reported in Section 4.4 are standardized or unstandardized estimates, and how the bootstrap resampling procedure accounted for the clustered (repeated firm-year) structure of the panel, for example via block or cluster bootstrapping at the firm level rather than simple case resampling, since resampling individual firm-year rows without respecting firm clusters would understate the standard errors of the indirect effects.

3.Results and Discussion

Descriptive Statistics and ERM Implementation Profile

Table 1 presents the descriptive statistics of the study variables based on 285 firm-year observations from 57 companies listed on the Indonesia Stock Exchange (IDX) during 2019–2023. The ERM Implementation Index shows substantial variation across firms, with values ranging from 12.00 to 91.00, a mean value of 54.36, and a standard deviation of 21.87. This finding indicates that ERM implementation among Indonesian public companies remains heterogeneous. While several firms have developed relatively comprehensive ERM practices aligned with the COSO (2017) framework, others still demonstrate limited integration of risk management processes into organizational decision-making.

The variation in ERM implementation reflects differences in organizational capabilities, governance structures, and risk management maturity among IDX-listed companies. Recent ERM literature emphasizes that the effectiveness of ERM depends not only on the existence of formal risk management structures but also on the extent to which risk management is embedded within strategic processes, governance mechanisms, and organizational communication systems (Horvey & Odei-Mensah, 2023; Jaber & Shah, 2024). Therefore, differences in ERM scores may represent differences in how firms utilize risk management systems to support strategic decisions and organizational control.

The Agency Cost Index (ACI), measured as the ratio of selling, general, and administrative expenses to total sales, has a mean value of 0.098 and a standard deviation of 0.034. This result indicates that managerial discretionary expenditures vary across firms. Consistent with agency theory, differences in ACI values may reflect differences in managerial efficiency and the extent to which firms are able to align managerial decisions with shareholder interests (Jensen & Meckling, 1976; Ang et al., 2000). However, because SG&A/Sales is an indirect proxy, the indicator should be interpreted as a general measure of potential agency-related inefficiency rather than a direct observation of individual agency cost components.

The descriptive statistics also show variation in financial performance volatility. The mean values of ROA volatility (σ_{ROA}), ROE volatility (σ_{ROE}), and Tobin's Q volatility (σ_{TQ}) are 0.057, 0.081, and 0.167, respectively. The higher volatility of Tobin's Q compared with accounting-based measures indicates that market-based performance is influenced not only by internal managerial decisions but also by external factors such as investor expectations, macroeconomic conditions, and market uncertainty. This pattern is particularly relevant during the COVID-19 period, when firms experienced substantial changes in operating conditions and market valuation.

Table 1. Descriptive Statistics of Study Variables

Variable	N	Minimum	Maximum	Mean	SD	Description
ERM Implementation Index	285	12.0	91.0	54.36	21.87	0–100 composite score
Agency Cost Index (ACI)	285	0.031	0.197	0.098	0.034	SG&A / Total Sales
ROA Volatility (σ_{ROA})	285	0.011	0.128	0.057	0.024	3-year rolling SD of ROA
ROE Volatility (σ_{ROE})	285	0.014	0.186	0.081	0.038	3-year rolling SD of ROE
Tobin's Q Volatility (σ_{TQ})	285	0.042	0.414	0.167	0.071	3-year rolling SD of Tobin's Q
Firm Size (LnTA)	285	11.24	19.87	14.73	1.94	ln(Total Assets)
Leverage (DER)	285	0.08	4.21	0.842	0.617	Total Debt / Total Equity
ROA Control	285	-0.047	0.231	0.078	0.051	Average ROA

Source: Annual reports, IDX database, OJK disclosures, and Bloomberg data (2019–2023). Authors' calculations.

Figure 2 illustrates the distribution of ERM implementation components and differences in agency costs across ERM implementation levels.

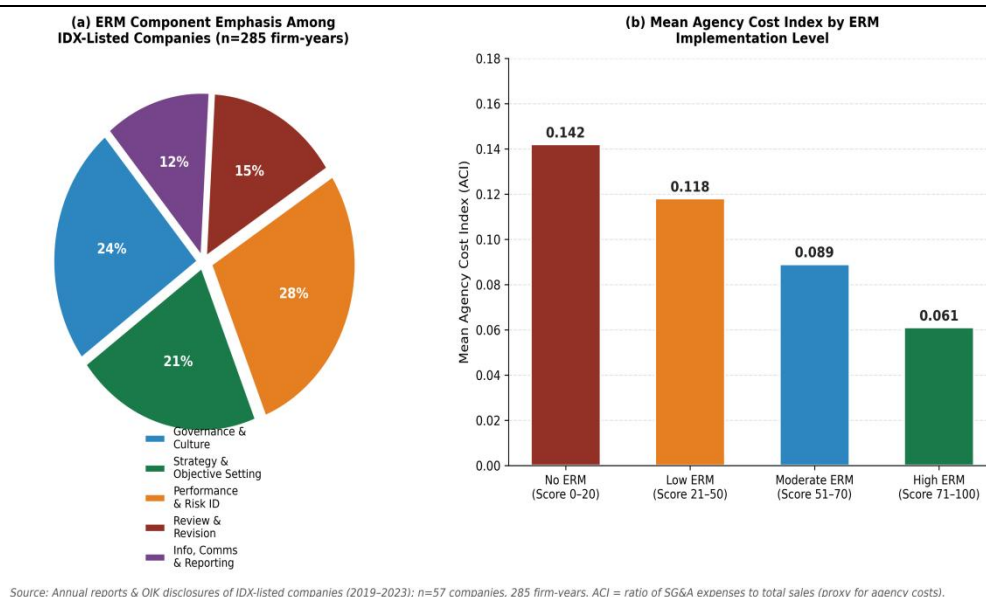


Figure 2. (a) Distribution of ERM Component Emphasis Among IDX-Listed Companies; (b) Mean Agency Cost Index by ERM Implementation Level

Source: Annual reports and OJK disclosures (2019–2023).

Figure 2(a) indicates that the Performance component represents the largest proportion of ERM implementation scores (28%), followed by Governance and Culture (24%), Strategy and Objective-Setting (21%), Review and Revision (15%), and Information, Communication, and Reporting (12%). The dominance of the Performance dimension suggests that Indonesian public companies tend to prioritize operational risk identification, assessment, and response activities. However, the relatively lower contribution of Information, Communication, and Reporting indicates that risk information integration into strategic decision-making remains a potential area for improvement.

This finding supports previous research suggesting that ERM maturity depends not only on risk identification capabilities but also on governance integration and information flows that enable effective managerial oversight (Horvey & Odei-Mensah, 2023). A risk management system that focuses primarily on operational activities without sufficient communication and governance integration may have limited effectiveness in reducing agency problems.

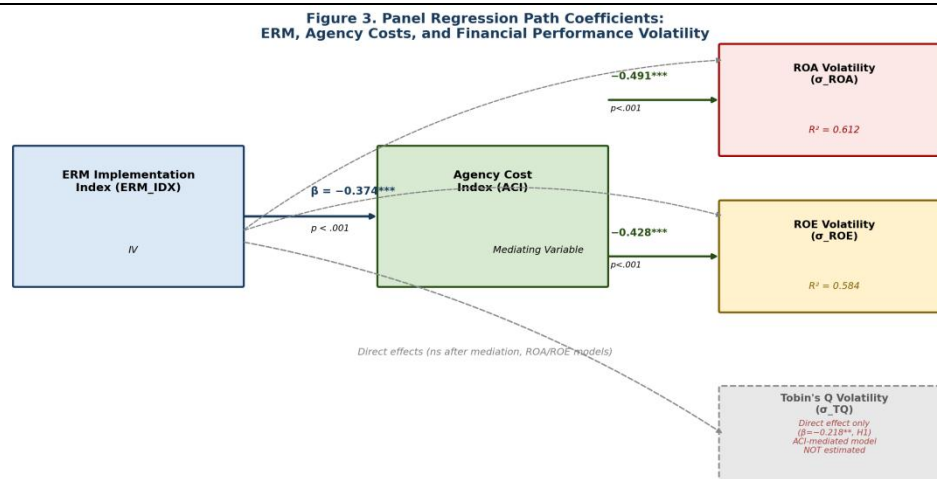
Figure 2(b) presents descriptive differences in the Agency Cost Index across ERM implementation levels. The mean ACI decreases from 0.142 among firms with no or minimal ERM implementation to 0.061 among firms with high ERM implementation. This represents a difference of approximately 57% between group means. However, this difference should be interpreted only as descriptive evidence because it does not represent explained variance or causal influence. The regression analysis below provides further evidence regarding the relationship between ERM implementation and agency costs.

Panel Regression Results and Mediation Analysis

Table 2 presents the fixed-effects panel regression results examining the relationship between ERM implementation, agency costs, and financial performance volatility.

Table 2. Fixed-Effects Panel Regression Results: ERM, Agency Costs, and Financial Performance Volatility

Variables	Model 1ACI	Model 2 σ _ROA	Model 3 σ _ROE	Model 4 σ _TQ	Model 5 σ _ROA + ACI	Model 6 σ _ROE + ACI
ERM Implementati on Index (ERM_IDX)	- 0.374*** (0.0 51)	- 0.312*** (0.0 48)	- 0.291*** (0.0 54)	- 0.218** (0.0 67)	-0.089 (0.063)	-0.074 (0.071)
Agency Cost Index (ACI)	—	—	—	—	0.491*** (0.0 88)	0.428*** (0.0 94)
Firm Size (LnTA)	- 0.061* (0.026)	- 0.044* (0.021)	- 0.059* (0.028)	- 0.031 (0.034)	-0.031 (0.024)	-0.038 (0.030)
Leverage (DER)	0.088** (0.03 1)	0.072** (0.02 7)	0.094** (0.03 3)	0.061* (0.02 8)	0.041 (0.029)	0.054 (0.036)
Mean ROA (Control Variable)	- 0.214*** (0.0 44)	- 0.187*** (0.0 41)	- 0.201*** (0.0 47)	- 0.152** (0.0 56)	- 0.089* (0.044)	- 0.108* (0.051)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
R ²	0.543	0.512	0.487	0.421	0.612	0.584
Adjusted R ²	0.521	0.489	0.463	0.396	0.591	0.561
F-statistic	41.32***	38.71***	34.28***	27.14***	44.82***	40.16***
Observations (N)	285	285	285	285	285	285



Note. *** $p < .001$; ** $p < .01$; ns = not significant. All paths based on fixed-effects panel regression; $N = 285$ firm-years. Full mediation is estimated for ROA and ROE volatility only. The agency-cost-mediated model for Tobin's Q volatility was not estimated (see Section 4.2); an earlier manuscript version incorrectly depicted this path with $\beta = -0.317$ and $R^2 = 0.501$, which have been removed as they do not appear in Table 2.

Source: Authors (2025)

Figure 3. Panel Regression Path Coefficients: ERM Implementation, Agency Cost Index, and Financial Performance Volatility

The first model examines whether ERM implementation is associated with agency costs. The result shows that ERM implementation has a negative and statistically significant association with ACI ($\beta = -0.374$, $p < 0.001$). This finding suggests that firms with stronger ERM implementation tend to demonstrate lower agency cost indicators. The result is consistent with the argument that ERM can function as a governance mechanism by improving monitoring processes, increasing transparency, and strengthening managerial accountability.

Models 2, 3, and 4 examine the direct association between ERM implementation and financial performance volatility. The results indicate that ERM implementation is negatively associated with ROA volatility ($\beta = -0.312$, $p < 0.001$), ROE volatility ($\beta = -0.291$, $p < 0.001$), and Tobin's Q volatility ($\beta = -0.218$, $p < 0.01$). These findings support H1 and indicate that firms with higher ERM implementation tend to experience more stable financial performance.

The stronger relationship observed for accounting-based volatility measures compared with Tobin's Q volatility suggests that ERM may be more closely related to internal operational stability than market valuation stability. Market-based volatility is affected by additional external factors, including investor sentiment and broader economic conditions, which may reduce the relative influence of firm-level governance mechanisms.

The Mediating Role of Agency Costs

The mediation analysis examines whether agency costs represent the mechanism through which ERM implementation relates to financial performance volatility. The results indicate that agency costs are positively associated with ROA volatility ($\beta = 0.491$, $p < 0.001$) and ROE volatility ($\beta = 0.428$, $p < 0.001$) after controlling for ERM implementation and firm characteristics.

Furthermore, after including ACI in the regression models, the direct association between ERM implementation and volatility becomes statistically insignificant for ROA volatility ($\beta = -0.089$, ns) and ROE volatility ($\beta = -0.074$, ns). The bootstrapped indirect effects confirm significant mediation effects for both outcomes, with an indirect effect of -0.183 for ROA volatility (95% CI $[-0.246, -0.121]$) and -0.160 for ROE volatility (95% CI $[-0.218, -0.102]$).

These results provide support for H2 and H3 and indicate that agency costs represent an important statistical mechanism linking ERM implementation with accounting-based financial stability. The findings are consistent with Jensen and Meckling's (1976) theoretical argument that governance mechanisms reducing agency conflicts may contribute to more efficient managerial decisions and improved organizational outcomes.

However, no mediation conclusion is drawn for Tobin's Q volatility because the agency-cost-mediated model for this outcome was not estimated. Therefore, the Tobin's Q result only indicates a direct association between ERM implementation and market-based volatility.

Additional Analysis of ERM Implementation and ROA Volatility

Figure 4 presents differences in ROA volatility across ERM implementation categories.

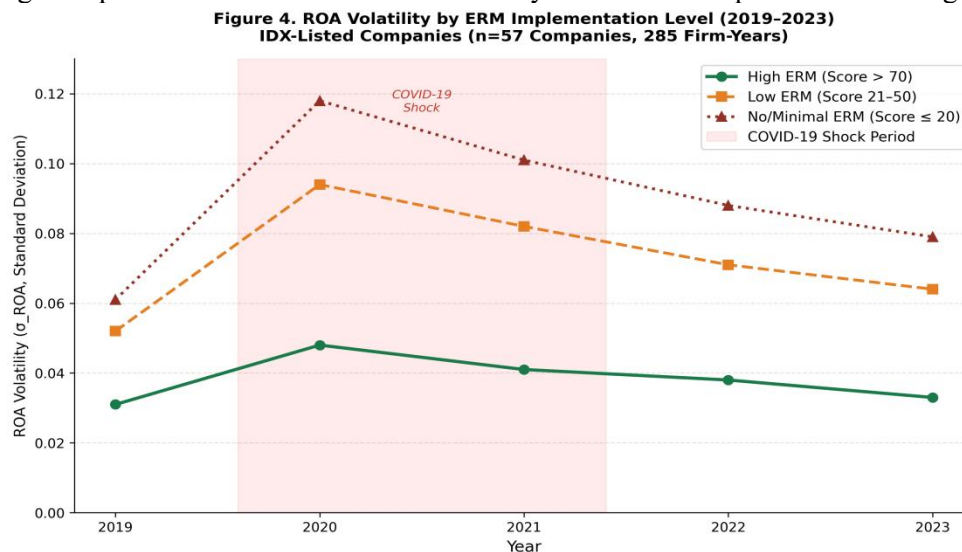


Figure 4. ROA Volatility by ERM Implementation Level

Source: Authors' calculations based on annual reports and IDX financial data.

The figure shows that firms with higher ERM implementation generally demonstrate lower ROA volatility compared with firms with lower ERM implementation. The difference becomes more visible during the COVID-19 disruption period, when firms with lower ERM implementation experienced greater volatility increases.

This pattern is consistent with previous research suggesting that ERM can support organizational resilience during periods of uncertainty by improving risk awareness, coordination, and strategic adaptation (Nocco & Stulz, 2006; Fung et al., 2025). Nevertheless, these findings should be interpreted as descriptive patterns rather than causal evidence.

Discussion

The findings provide empirical support for the argument that ERM represents not only a risk control mechanism but also a governance capability that may contribute to financial stability. The negative association between ERM implementation and financial performance volatility suggests that firms with more developed risk management systems tend to experience more stable performance outcomes. This finding extends previous ERM research that primarily focuses on firm value and profitability by demonstrating the relevance of performance stability as an additional organizational outcome.

More importantly, the mediation analysis highlights the potential role of agency cost reduction as an explanatory mechanism. The results indicate that ERM implementation is associated with lower agency costs, while higher agency costs are associated with greater financial performance volatility. This finding supports agency theory by suggesting that governance mechanisms embedded within ERM may reduce managerial inefficiencies and improve alignment between managerial actions and shareholder interests.

Theoretically, this study contributes to ERM literature by moving beyond the question of whether ERM creates value toward understanding how ERM may create value. While previous studies demonstrate that ERM quality is related to superior organizational outcomes (Baxter et al., 2013; Grace et al., 2015), this study provides evidence that agency-related mechanisms may represent one pathway explaining the relationship between ERM and financial stability.

From a practical perspective, the findings suggest that organizations should view ERM as a strategic governance capability rather than merely a compliance requirement. The effectiveness of ERM depends on whether risk information is integrated into strategic planning, managerial evaluation, and board oversight. For regulators such as OJK, the findings suggest that assessing ERM quality and governance integration may provide greater insight than evaluating disclosure practices alone.

Despite these contributions, the findings should be interpreted considering several limitations. The ACI proxy based on SG&A/Sales may capture factors beyond managerial discretion, including operational efficiency and industry characteristics. In addition, although fixed-effects estimation controls for time-invariant firm characteristics, the observational design cannot fully eliminate endogeneity concerns. Future studies may strengthen this research area by applying alternative agency cost measures, instrumental variable approaches, or cross-country comparisons.

4. Conclusions and Suggestion

This study provides empirical evidence regarding the relationship between Enterprise Risk Management (ERM) implementation, agency costs, and financial performance volatility among companies listed on the Indonesia Stock Exchange (IDX). The findings indicate that ERM implementation is associated with lower financial performance volatility across ROA volatility, ROE volatility, and Tobin's Q volatility. Furthermore, the results show that ERM implementation is negatively associated with agency costs, while agency costs are positively associated with accounting-based financial performance volatility. The mediation analysis indicates that agency costs statistically explain the relationship between ERM implementation and ROA and ROE volatility, suggesting that the governance mechanism underlying ERM effectiveness operates partly through the reduction of agency-related inefficiencies. However, because the agency-cost-mediated model for Tobin's Q volatility was not estimated, this study does not extend the mediation conclusion to market-based volatility. These findings contribute to the ERM literature by extending previous research beyond direct performance outcomes and highlighting agency cost reduction as a potential mechanism through which ERM relates to organizational stability. Nevertheless, the findings should be interpreted as statistical associations rather than causal effects due to the observational panel design.

From a practical perspective, the findings suggest that organizations should consider ERM as a strategic governance capability rather than merely a compliance activity. The benefits of ERM may be strengthened when risk management practices are integrated with board oversight, strategic planning, managerial accountability, and organizational decision-making processes. For regulators and policymakers, particularly in emerging markets such as Indonesia, improving ERM quality and governance integration may provide greater value than focusing only on the existence of risk disclosures. This study also has several limitations that provide directions for future research. The ERM index based on annual report disclosures may not fully capture internal risk management practices and organizational risk culture, while the Agency Cost Index based on SG&A/Sales may reflect operational characteristics beyond managerial discretion. Future studies may address these

limitations by applying alternative agency cost measures, stronger causal research designs such as instrumental variable or generalized method of moments approaches, and comparative studies across different institutional contexts. Qualitative investigations involving boards, risk committees, and senior managers may also provide deeper insights into how ERM influences managerial behavior and governance effectiveness.

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