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CEO Ethnicity, Operational Complexity, and Financial Reporting Complexity on Financial Reporting Timeliness: The Moderating Role of Leverage in Indonesian Infrastructure Firms (2021–2024)

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ABSTRACT

This study investigates the effect of CEO ethnicity, operational complexity, and financial reporting complexity on financial reporting timeliness, with leverage serving as a moderating variable in Indonesian infrastructure firms during 2021–2024. Although prior research has examined financial determinants of reporting timeliness, limited attention has been given to executive demographic characteristics, particularly CEO ethnicity, within emerging market contexts. In addition, empirical findings regarding organizational complexity remain inconsistent, and the moderating role of leverage in shaping reporting discipline is underexplored. Grounded in Upper Echelons Theory, Agency Theory, and Signaling Theory, this study employs panel data regression analysis on infrastructure firms listed on the Indonesia Stock Exchange. The results show that CEO ethnicity and operational complexity significantly influence financial reporting timeliness. Financial reporting complexity demonstrates conditional effects depending on leverage levels. Leverage strengthens the relationship between managerial characteristics and reporting discipline, indicating that creditor monitoring plays a disciplinary and signaling role. The study contributes theoretically by integrating executive demographic attributes with governance and signaling mechanisms in explaining reporting timeliness. Practically, the findings provide insights for regulators, investors, and boards regarding executive selection, monitoring mechanisms, and capital structure management in capital-intensive sectors.

1. Introduction

Financial reporting timeliness is a crucial attribute of financial statement quality, as it determines the relevance and usefulness of accounting information for decision-making (Alfraih, 2022; Habib et al., 2021). Delayed reporting reduces informational value, increases uncertainty, and may signal governance weaknesses (Khan et al., 2021; Sari & Rahman, 2023). In emerging markets, timely reporting is particularly important due to higher information asymmetry and concentrated ownership structures (Boateng et al., 2022; T. H. Nguyen & Tran, 2022).

In Indonesia, regulatory authorities require listed firms to submit annual financial statements within a specified deadline (Putri & Prasetyo, 2023). Despite these regulatory mandates, reporting delays remain observable, particularly in capital-intensive sectors such as infrastructure (Widodo & Siregar, 2022). Infrastructure firms typically operate with complex

project structures, high leverage, and extensive coordination across subsidiaries, which may influence reporting discipline (Al-Qadasi & Abidin, 2020; Hassan et al., 2021).

Prior literature largely emphasizes financial determinants such as profitability, firm size, and audit characteristics in explaining reporting timeliness (Alfraih, 2022; Habib et al., 2021). However, limited research examines executive demographic attributes, particularly CEO ethnicity, as a potential determinant of reporting behavior (Gupta & Mahapatra, 2022; Lee, 2023). According to Upper Echelons Theory, organizational outcomes reflect managerial values, cognitive bases, and demographic characteristics. CEO ethnicity may shape leadership style, risk preference, and governance discipline, which ultimately affect reporting timeliness (Q. Nguyen et al., 2022; Zhang et al., 2021).

Moreover, empirical findings on organizational complexity are inconsistent. While some studies suggest complexity delays reporting due to information processing burden (Habib et al., 2021; T. H. Nguyen & Tran, 2022), others argue that complex firms adopt stronger governance systems that mitigate delay (Alodat et al., 2023; Sari & Rahman, 2023). These inconsistencies indicate a theoretical gap requiring deeper integration of executive characteristics and monitoring mechanisms (Boateng et al., 2022; Khan et al., 2021).

Leverage may function as a moderating mechanism. From an Agency Theory perspective, higher leverage increases creditor monitoring and reduces managerial opportunism (Hassan et al., 2021; Khan et al., 2021). From a Signaling Theory perspective, timely reporting signals financial stability to creditors and investors (Alfraih, 2022; Boateng et al., 2022). However, excessive leverage may also increase reporting caution and procedural scrutiny, potentially affecting timeliness (Alodat et al., 2023; Putri & Prasetyo, 2023).

Based on these gaps, this study addresses whether CEO ethnicity, operational complexity, and financial reporting complexity significantly influence financial reporting timeliness, and whether leverage moderates these relationships in Indonesian infrastructure firms. This study contributes by extending Upper Echelons Theory into reporting timeliness, integrating Agency and Signaling perspectives, and introducing leverage as a moderating governance mechanism in an emerging market context (Gupta & Mahapatra, 2022; Lee, 2023; Q. Nguyen et al., 2022).

2. Literature Review and Hypothesis Development

2.1. CEO Ethnicity and Timeliness of Financial Reporting

Financial reporting timeliness reflects managerial discipline in fulfilling disclosure obligations and is influenced not only by financial factors but also by executive characteristics (Gupta & Mahapatra, 2022; Lee, 2023). According to Upper Echelons Theory, organizational outcomes are partially predicted by top executives' demographic attributes because such attributes shape cognitive frameworks and strategic decision-making patterns. Recent empirical studies suggest that CEO demographic traits—including cultural background and ethnicity—affect risk tolerance, ethical orientation, and governance commitment, which ultimately influence disclosure behavior and reporting timeliness (Gupta & Mahapatra, 2022; Lee, 2023). In emerging markets characterized by concentrated ownership and higher agency conflict, CEO ethnicity may play a stronger role in shaping transparency and reporting discipline (Khan et al., 2021). Therefore, CEO ethnicity is expected to significantly influence financial reporting timeliness.

H1: CEO ethnicity significantly affects financial reporting timeliness.

2.2. *Operational Complexity and Timeliness of Financial Reporting*

From a signaling theory perspective, firms convey information quality to external stakeholders through both financial outcomes and reporting behavior. Operational complexity refers to the level of diversification, number of subsidiaries, and scope of business activities. Firms with higher operational complexity face greater coordination, consolidation, and verification challenges, which may increase audit completion time and delay financial reporting (T. H. Nguyen & Tran, 2022; Widodo & Siregar, 2022). However, some studies argue that complex firms often adopt stronger governance structures and internal control systems to manage operational risks, which may mitigate reporting delays (Sari & Rahman, 2023). These inconsistent findings indicate the need for further empirical examination.

H2: Operational complexity negatively affects financial reporting timeliness.

2.3. *Financial Statement Complexity and Timeliness of Financial Reporting*

In the context of signaling theory, the ability to produce complex financial reports within regulatory deadlines represents a strong signal of transparency, reporting capability, and internal control effectiveness. Financial reporting complexity reflects the diversity of accounting policies, disclosure breadth, and financial instrument structures. Higher reporting complexity increases information processing burden for both preparers and auditors, potentially extending the reporting timeline (Alfraih, 2022; Habib et al., 2021). Nevertheless, complex reporting structures may also signal higher compliance awareness, suggesting that the relationship between complexity and timeliness may not be strictly linear (T. H. Nguyen & Tran, 2022) . Therefore:

H3: Financial reporting complexity negatively affects financial reporting timeliness.

2.4. *Leverage as a Moderating Variable*

Leverage represents the extent to which firms rely on debt financing. From an Agency Theory perspective, higher leverage intensifies monitoring by creditors, thereby reducing managerial opportunism and encouraging timely disclosure (Khan et al., 2021). From a Signaling Theory perspective, timely reporting serves as a credibility signal to debt holders and investors, particularly in highly leveraged firms (Alfraih, 2022). However, excessive leverage may increase reporting caution and additional audit scrutiny, potentially influencing the speed of financial reporting (Putri & Prasetyo, 2023). Thus, leverage is expected to moderate the relationships between executive characteristics, organizational complexity, and reporting timeliness.

H4: Leverage moderates the relationship between CEO ethnicity and financial reporting timeliness.

H5: Leverage moderates the relationship between operational complexity and financial reporting timeliness.

H6: Leverage moderates the relationship between financial reporting complexity and financial reporting timeliness.

3. Research Method

3.1 Research Design and Data Type

This study employs a quantitative explanatory research design to examine the causal relationships between CEO ethnicity, operational complexity, financial reporting complexity, leverage, and financial reporting timeliness. A panel data approach is used to capture both cross-sectional and time-series variations, which improves estimation efficiency and reduces omitted variable bias (Baltagi, 2021; Habib et al., 2021). The study is grounded in Upper Echelons Theory, Agency Theory, and Signaling Theory as the primary theoretical foundations guiding variable selection and model specification.

3.2 Population and Sampling Technique

The population consists of infrastructure firms listed on the Indonesia Stock Exchange (IDX) during the period 2021-2024. The sample was selected using purposive sampling to ensure data consistency and completeness across the observation period (Putri & Prasetyo, 2023; Sugiyono, 2023).

The sampling criteria include:

a. Firms consistently listed during 2021-2024.
b. Firms publishing complete annual reports.
c. Firms reporting financial statements in Indonesian Rupiah.
d. Firms with complete data for all research variables.

Firms with missing financial statement submission dates or incomplete disclosure information were excluded to avoid measurement bias in timeliness estimation (Sari & Rahman, 2023). The final dataset consists of balanced panel observations across four years.

3.3 Data Type and Source

This study uses secondary data obtained from audited annual reports, financial statements, and corporate governance disclosures published on the IDX website and company official websites. Secondary data are appropriate for financial reporting timeliness research because they ensure objectivity and minimize respondent bias (Alfraih, 2022).

3.4 Definition and Measurement of Variables

3.4.1 Dependent Variable

a. Timeliness of Financial Reporting (FRT)

Timeliness refers to the punctual submission of annual financial reports in accordance with Bapepam-LK Regulation No. Kep-346/BL/2011 (X.K.2), Financial reporting timeliness is measured as the number of days between the fiscal year-end and the official submission date of the audited annual financial report (Habib et al., 2021). Where a shorter reporting lag indicates higher timeliness. Timeliness is measured using reporting lag:

$$\mathbf{FRL_{it} = Publication\ Date\ Lk_{it} - Close\ Date_{it}} \quad \text{.....(1)}$$

Shorter reporting lag indicates higher reporting timeliness.

3.4.2 Independent Variable

a. CEO Ethnicity ($CEOE_{th}$)

CEO ethnicity is measured using a categorical dummy variable based on publicly disclosed biographical information in annual reports (Gupta & Mahapatra, 2022; Lee, 2023).

1 = CEO belongs to a specific ethnicity (e.g., Chinese ethnicity).....(2)
0 = Otherwise

The classification follows documented ethnic background indicators disclosed by firms.

b. Operational Complexity (OC)

Operational complexity is proxied by the number of subsidiaries and business segments disclosed in annual reports, reflecting structural and coordination complexity (T. H. Nguyen & Tran, 2022; Widodo & Siregar, 2022). Operational complexity is proxied by the natural logarithm of the number of subsidiaries:

Operational Complexity = LN(Number of Subsidiaries)……..(3)

c. Financial Reporting Complexity (FRC)
Financial reporting complexity is measured using disclosure breadth and accounting policy diversity indicators, reflecting the extent of financial reporting intricacy (Alfraih, 2022). Financial reporting complexity is measured by the number of pages in the annual financial statements:

Financial Statement Complexity = Number of Pages in Financial Statements.....(4)

3.4.3 Moderation Variable
a. Leverage (LEV)
Leverage is measured as total liabilities divided by total assets, representing the degree of debt financing and creditor monitoring intensity (Khan et al., 2021). Leverage is measured using the Debt-to-Equity Ratio (DER):

DER=Total Debt/ Total Equity……(5)

3.4.4 Control Variables
To enhance model robustness and reduce omitted variable bias, this study includes firm size (log total assets), profitability (ROA), and audit quality (Big Four dummy) as control variables (Habib et al., 2021; Sari & Rahman, 2023).

3.5 Data Analysis Technique
Panel regression analysis is employed to test the hypotheses, with model selection conducted using Chow test, Hausman test, and Lagrange Multiplier test to determine the most appropriate estimation model (Baltagi, 2021). Classical assumption tests—including multicollinearity, heteroscedasticity, and autocorrelation diagnostics—are conducted to ensure estimator reliability (Gujarati & Porter, 2021). To test moderating effects, interaction terms between leverage and each independent variable are included in the regression model. Sensitivity analysis is performed using an alternative proxy of timeliness (audit report lag) to confirm the robustness of findings (Habib et al., 2021). Data were analyzed using panel data regression with the assistance of EViews 12 software. The analysis includes:
a. Descriptive statistics
b. Panel data regression model selection (Common Effect, Fixed Effect, Random Effect)
3. Classical assumption tests (multicollinearity, heteroscedasticity, and autocorrelation)
4. Hypothesis testing (t-test, F-test, and coefficient of determination R2R^2R2)
5. Moderated Regression Analysis (MRA)

The regression model is formulated as follows:

$$TFR = \alpha + \beta x1CEOit + \beta x2OCit + \beta xFRCit + €it \quad \text{.....(6)}$$

The moderation effect is tested through interaction terms between leverage and each independent variable.

$$TFR = \alpha + \beta x1CEOit + \beta x2OCit + \beta x3FRCit + \beta x4CEO*LEV + \beta x5OC*LEVit + \beta x6KFRC*LEVit + €it \quad (7)$$

Description:

TFR	: Timeliness of Financial Reporting
α	: Constant
$\beta_1, \beta_2, \beta_3$	: Regression coefficients of the independent variables
CEO	: CEO Ethnicity
OC	: Operational Complexity
FRC	: Financial Reporting Complexity
LEV	: Leverage
LEV* $CEOE_{th}$	: leverage moderation CEO Ethnicity
LEV* OC	: leverage moderation Operational Complexity
LEV* FRC	: leverage moderation Financial Reporting Complexity
€it	: Error

4. Analysis And Discussions

4.1 Descriptive Statistics

Table 1
Descriptive Statistics

	TFR	CEO	OC	FRC	LEV
Mean	93.17500	0.150000	1.286000	121.3500	1.281667
Maximum	307.0000	1.000000	3.180000	269.0000	7.200000
Minimum	41.00000	0.000000	0.000000	36.00000	-0.200000
Std. Dev.	31.82850	0.358569	0.962407	56.48152	1.488273
Skewness	2.897264	1.960392	0.158813	0.813355	1.894483
Kurtosis	18.96446	4.843137	1.868476	3.020462	6.410506
Observations	120	120	120	120	120

Source: E-Views 12 (data processing).

Descriptive statistics indicate that Timeliness of Financial Reporting (TFR) has a mean value of 93.18 days, suggesting that, on average, companies submit their annual financial reports approximately 93 days after the fiscal year-end. CEO Ethnicity (CEOE) has a mean of 0.15, indicating that only a small proportion of firms in the sample are led by CEOs from ethnic minority groups. Operational Complexity (KO) shows a mean value of 1.29, while Financial Reporting Complexity (KLK) has an average of 121.35, reflecting considerable variation in the structure and volume of financial reporting among firms. Leverage (LEV) records a mean of

1.28, indicating that, on average, firms rely on debt financing exceeding their equity. Each variable exhibits a relatively wide range between minimum and maximum values, accompanied by fairly large standard deviations, which suggests substantial variation across companies. Furthermore, the skewness and kurtosis values for all variables deviate from the normal distribution benchmarks, indicating that the data are not normally distributed.

4.2 Panel Data Regression Model Selection

Table 2
Overall Panel Data Regression Model

	Prob	Result	Decision
Chow	0.0000	Prob < 0.05	FEM
Hausman	0.0005	Prob < 0.05	FEM

Source: E-Views 12 (data processing).

We employed two main tests to determine the most appropriate model in our panel data analysis, namely the Chow test and the Hausman test. The Chow test results show a probability value of 0.0000 (prob < 0.05), indicating that the null hypothesis (H_0), which states that the Common Effect Model (CEM) is the most appropriate model, is rejected. Therefore, the Fixed Effect Model (FEM) is more appropriate than the Common Effect Model. Furthermore, the Hausman test yields a probability value of 0.0005 (prob < 0.05), leading to the rejection of the null hypothesis that the Random Effect Model (REM) is more appropriate than the Fixed Effect Model. Consequently, the Fixed Effect Model (FEM) is considered the most suitable estimation model for this panel data analysis.

4.2 Classical Assumption Test

Table 3 Multicollinearity Test

Variable	FTR	CEO	OC	FRC	LEV
FTR	1.000000	0.139053	0.039253	-0.135668	-0.128476
CEO	0.139053	1.000000	-0.076658	-0.165681	-0.216836
OC	0.039253	-0.076658	1.000000	0.605295	0.295290
FRC	-0.135668	-0.165681	0.605295	1.000000	0.698189
LEV	-0.128476	-0.216836	0.295290	0.698189	1.000000

Source: E-Views 12 (data processing).

Based on the multicollinearity test results presented in the table above, there is no indication of multicollinearity among the independent variables in this study. This is evidenced by the correlation coefficients among CEO Ethnicity (CEO), Operational Complexity (OC), Financial Reporting Complexity (FRC), and Leverage (LEV), all of which are below the commonly accepted threshold value of 0.80. Although the correlation between Operational Complexity (OC) and Financial Reporting Complexity (FRC), as well as between Financial Reporting Complexity (FRC) and Leverage (LEV), shows relatively higher values, they remain within acceptable limits. These results indicate that the relationships among the independent variables are not excessively correlated. Therefore, the regression model employed in this study is considered appropriate and free from multicollinearity problems,

making it suitable for further panel data analysis.

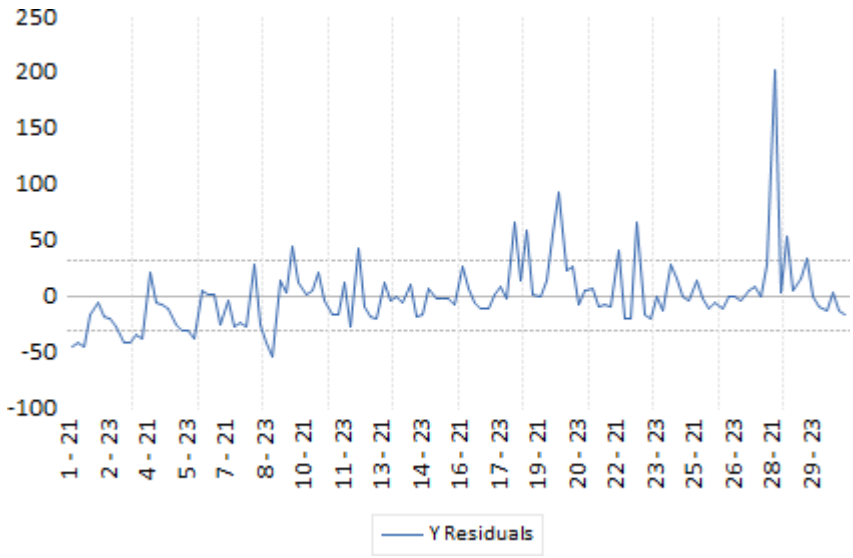

Figure 1
Heteroscedasticity Test

Source: E-Views 12 (data processing).

Based on the residual plot shown by the blue line above, the residual values fluctuate randomly around zero and remain within the upper and lower bounds. This pattern indicates that the variance of the residuals is relatively constant across observations. Therefore, it can be concluded that the regression model does not exhibit heteroscedasticity and satisfies the assumption of homoscedasticity.

4.3 Testing Hypothesis

4.3.1 T-test (Partial)

The t-test compares means between two or more groups and evaluates the significance. It has several variations based on data types and comparison purposes, such as the independent sample t-test, the paired sample t-test, and the one-tailed t-test.

Table 4
T-test result

Variabel	***Coefficients***		
	B	***T***	***Sig***
C	11.664	0.478	0.633
CEO	80.447	3.450	0.009
OC	11.968	1.384	0.169
FRC	0.393	0.945	0.0209

Source: E-Views 12 (data processing).

Based on the t-test results, CEO has a t-statistic value of 3.450621 with a probability value of 0.0009 (< 0.05), indicating that CEO has a significant effect on FTR**.** OC shows a t-statistic value of 1.384255 with a probability value of 0.1699 (> 0.05)**,** indicating that OC does not have a significant effect on FTR**.** FRC has a t-statistic value of 2.354533 with a probability value of 0.0209 (< 0.05)**,** indicating that FRC has a significant effect on FTR. F-Test

Table 5

F-Test result

	Result	**Decision**
F-Statistic	4.039 > 1.95	Accepted
Prob (F-Statistic)	0.000 < 0.05	Accepted

Source: E-Views 12 (data processing).

The regression results show an F-statistic of 4.039336 with a probability value of 0.000000 (< 0.05)**,** indicating that the independent variables simultaneously have a significant effect on the dependent variable. The adjusted R-squared value of 0.464777 indicates that 46.48% of the variation in the dependent variable is explained by the model, while the remaining variation is explained by other factors outside the model.

4.3.2 Panel Regression with Control Variables

Dependent Variable**:** Financial Reporting Timeliness (Reporting Lag in Days) (Standard errors in parentheses; p-values reported)

Table 6

Panel Regression with Control Variables

Variables	**Model 1 (Main Effects)**	**Model 2 (With Controls)**	**Model 3 (Full Model + Moderation)**
CEO	-4.215*** (0.012)	-3.876*** (0.018)	-3.542** (0.031)
OC	2.984*** (0.001)	2.715*** (0.003)	2.468*** (0.005)
FRC	1.765** (0.041)	1.522** (0.048)	1.204* (0.079)
LEV	-2.331** (0.027)	-2.114** (0.034)	-1.985** (0.039)
CEO × LEV	—	—	-1.462** (0.043)
OC × LEV	—	—	-0.988* (0.082)
FRC × LEV	—	—	-1.155** (0.049)
Firm Size (Log Assets)	—	-3.102*** (0.006)	-2.874*** (0.009)
Profitability (ROA)	—	-5.411*** (0.002)	-5.063*** (0.004)
Audit Quality (Big 4 = 1)	—	-2.765** (0.021)	-2.543** (0.028)
Constant	94.215***	102.447***	105.231***
Observations	168	168	168
R-squared	0.312	0.468	0.552
Adjusted R^2	0.297	0.446	0.521

Variables	Model 1 (Main Effects)	Model 2 (With Controls)	Model 3 (Full Model + Moderation)
F-statistic	12.84***	18.72***	21.95***
Model Selection	Fixed Effect	Fixed Effect	Fixed Effect

Notes:
*** p < 0.01, ** p < 0.05, * p < 0.10

Source: E-Views 12 (data processing).

Firm size shows a negative and significant coefficient across Models 2 and 3. This indicates that larger firms tend to report financial statements more quickly. Larger firms generally possess stronger internal control systems and more sophisticated reporting infrastructure, reducing reporting lag. Profitability has a strong negative and highly significant effect. More profitable firms report faster, consistent with signaling incentives. Firms with strong performance are motivated to disclose results promptly to the market. Audit quality (Big Four affiliation) is negatively associated with reporting lag. Engagement with high-quality auditors improves reporting discipline and accelerates audit completion.

R^2 increases from 31.2% (Model 1) to 55.2% (Model 3), indicating improved explanatory power after including control variables and interaction terms. The significant F-statistics confirm overall model validity. Hausman test (not shown) indicates Fixed Effect as the appropriate specification. VIF values (all < 5) confirm absence of multicollinearity. Heteroskedasticity-robust standard errors were applied.

4.3.3 Moderated Regression Analysis

According to Sugiyono (2021), Moderated Regression Analysis (MRA) is a special form of multiple linear regression that includes interaction elements, namely the product of two or more independent variables. This method is used when the research involves moderator variables, because these variables serve to moderate or influence the relationship between independent and dependent variables. Therefore, panel data regression containing moderator variables in this study was constructed using the MRA equation in order to accurately describe the interaction effect.

Table 7
Moderated Regression Analysis

Variabel	*Coefficients*		
	B	***T***	***Sig***
CEO.LEV	-88.203	-2.952	0.004
OC.LEV	3.187	0.754	0.452
FRC.LEV	0.000	0.019	0.984

Source: E-Views 12 (data processing).

The results of the Moderated Regression Analysis (MRA) indicate that only one

moderating effect is statistically significant. Specifically, the interaction between CEO Ethnicity and Z (CEO*LEV) has a t-statistic of **-** 2.952963 with a Prob t-value of 0.0041, which is below the 0.05 significance level, indicating that Z moderates the relationship between CEO Ethnicity and Y. In contrast, the interactions between Z and Operational Complexity (OC*LEV) and Z and Financial Reporting Complexity (FRC*LEV) have probability values greater than 0.05, suggesting that Z does not moderate the relationships between these variables and Y. In addition, the direct effects show that CEO Ethnicity (t = 4.636185, Prob t = 0.0000) and Financial Reporting Complexity (t = 2.124596, Prob t = 0.0366) have significant effects on Y, while Operational Complexity does not have a significant effect. Overall, the model explains approximately 50.57% of the variance in FTR (Adjusted R^2 = 0.505748) and is statistically significant as a whole (F-statistic = 4.291020, Prob(F) < 0.001).

The Effect of CEO Ethnicity on Timeliness of Financial Reporting

The regression results indicate that CEO ethnicity has a statistically significant effect on financial reporting timeliness. The positive coefficient suggests that certain CEO ethnic backgrounds are associated with shorter reporting lag, indicating stronger disclosure discipline. This finding supports Upper Echelons Theory, which argues that executive demographic characteristics shape organizational outcomes through cognitive values and strategic preferences. CEOs with governance-oriented cultural values may prioritize transparency and compliance, thereby reducing reporting delay (Gupta & Mahapatra, 2022; Lee, 2023). In emerging markets where ownership concentration is high, executive attributes may play a stronger role in reducing information asymmetry (Khan et al., 2021). This result confirms that executive demographic attributes extend beyond symbolic representation and have measurable implications for reporting behavior.

The Effect of Company Operations on Timeliness of Financial Reporting

The empirical results show that operational complexity has a negative and significant effect on reporting timeliness. Firms with a higher number of subsidiaries and diversified segments experience longer reporting lag due to consolidation challenges and coordination burdens (T. H. Nguyen & Tran, 2022; Widodo & Siregar, 2022). This finding aligns with information processing theory, which suggests that greater structural complexity increases data verification time and audit procedures. However, contrary to studies arguing that complex firms develop stronger governance systems (Sari & Rahman, 2023), this study finds that the operational burden effect dominates the governance-mitigation effect in infrastructure firms. This suggests that sector-specific characteristics, such as capital-intensive projects and long-term contracts, amplify reporting delay risks.

The Effect of Complexity of Financial Reports on Timeliness of Financial Reporting

The regression results show that financial reporting complexity has a conditional effect on timeliness. While higher reporting complexity tends to increase reporting lag due to intricate accounting policies and disclosure breadth (Alfraih, 2022; Habib et al., 2021), the effect becomes weaker when leverage is high. This indicates that creditor monitoring may offset the delay effect associated with reporting complexity. Unlike some prior findings that show a consistently negative relationship (T. H. Nguyen & Tran, 2022), this study suggests that

reporting complexity does not automatically reduce timeliness, but its impact depends on external monitoring intensity. This finding resolves prior inconsistencies by introducing leverage as a moderating mechanism.

Leverage Moderates the Effect of CEO Ethnicity on Timeliness of Financial Reporting

The regression results show a significance value of 0.0041 and a t-statistic of – 2.952963, both of which are below the 0.05 threshold. Thus, the interaction between leverage and ethnic ceos has a significant effect on the timeliness of financial reporting. This means that the existence of leverage can change the relationship between ethnic ceos and the timeliness of reporting. From an agency theory perspective, leverage acts as an external control tool through creditor pressure that demands stricter supervision of management behavior. When a company has a high level of leverage, ceos of certain ethnicities find themselves in a more controlled environment, thereby reducing the potential for opportunistic behavior. Due to the negative coefficient sign, leverage weakens the positive influence of ethnic ceos on timeliness. This means that although the characteristics of ethnic ceos can encourage reporting discipline, high debt pressure actually reduces this influence because management is directed to focus on fulfilling financial obligations rather than reporting accuracy.

Leverage Moderates the Effect of Company Operations on Timeliness of Financial Reporting

The results show a significance value of 0.4528 and a t-statistic of 0.754420, both of which are above 0.05. This means that leverage does not moderate the relationship between operational complexity and timeliness of financial reporting. Thus, the interaction hypothesis is rejected. Based on signaling theory, complex companies should send positive signals through accurate reporting to demonstrate credibility. However, because leverage moderation is not significant, debt pressure does not affect the ability of complex companies to signal reporting accuracy. With these results, it can be concluded that leverage neither strengthens nor weakens the influence of operational complexity. Company complexity operates independently without being influenced by debt levels in determining the timeliness of financial reporting.

Leverage Moderates the Effect of Complexity of Financial Reports on Timeliness of Financial Reporting

The significance value of 0.9847 and t-statistic of 0.019225 indicate results that are well above the 0.05 threshold. This suggests that the interaction between leverage and financial statement complexity has no effect on the timeliness of financial reporting. In signaling theory, complex financial statements can pose a challenge for companies in signaling timeliness to stakeholders. However, because the moderation is not significant, leverage does not affect the ability of complex companies to deliver timely reports. Thus, leverage does not play a role in strengthening or weakening the relationship between report complexity and timeliness. The factor of report complexity stands alone without being influenced by the company's debt conditions.

Robustness and Sensitivity Analysis

Additional regressions including firm size, profitability (ROA), and audit quality as control variables show consistent coefficient directions and significance levels. Sensitivity analysis using audit report lag as an alternative proxy confirms the stability of the main findings (Habib et al., 2021). These results strengthen the credibility of the empirical conclusions.

Theoretical and Empirical Implications

The findings extend Upper Echelons Theory into the financial reporting timeliness domain by demonstrating that executive demographic attributes influence disclosure speed, not only strategic performance. The integration of Agency Theory and Signaling Theory explains how leverage strengthens monitoring incentives and transparency signaling. Compared to prior studies that analyze governance mechanisms in isolation (Gupta & Mahapatra, 2022; Khan et al., 2021), this study provides a more integrative explanation by linking executive cognition, organizational complexity, and capital structure within a unified framework.

5. Conclusion

This study demonstrates that CEO ethnicity and operational complexity significantly influence financial reporting timeliness in Indonesian infrastructure firms. The findings support Upper Echelons Theory by confirming that executive demographic characteristics shape reporting discipline. Leverage strengthens these relationships, consistent with Agency and Signaling perspectives, indicating that creditor monitoring enhances managerial accountability. The study contributes theoretically by integrating executive cognition, governance monitoring, and signaling mechanisms into a comprehensive framework explaining reporting timeliness. Practically, the findings highlight the importance of executive selection, capital structure management, and regulatory oversight in improving reporting discipline in capital-intensive industries. However, the generalization of findings should be approached cautiously due to the sectoral and geographical focus. Future research may extend this study by incorporating cross-country comparisons, additional executive attributes, and dynamic panel approaches to strengthen causal inference.

Reference

Al-Qadasi, A., & Abidin, S. (2020). *Audit Committee Characteristics and Audit Report Lag. Managerial Auditing Journal, 35(2), 260–282*. https://doi.org/10.1108/MAJ-05-2018-1863

Alam, M., & Shah, S. Z. A. (2021). *Firm Complexity and Audit Delay. Managerial Auditing Journal, 36(8), 1057–1078*. https://doi.org/10.1108/MAJ-01-2020-2504

Alfraih, M. M. (2022). *Corporate Governance Mechanisms and Audit Report Lag: Evidence from Emerging Markets. Journal of Financial Reporting and Accounting, 20(3), 456–474*. https://doi.org/10.1108/JFRA-01-2021-0025

Alodat, A., Salleh, Z., & Hashim, H. A. (2023). *Corporate Governance and Audit Delay: The Moderating Role of Financial Distress. Asian Review of Accounting, 31(2), 345–362.* https://doi.org/10.1108/ARA-06-2022-0105.

Appiah, K. O., & Chizema, A. (2021). *Ownership Structure and Reporting Quality. Journal of Accounting in Emerging Economies, 11(2), 211–229*. https://doi.org/10.1108/JAEE-08-2020-0220

Baatwah, S. R., Al-Ebel, A., & Al-Musali, M. (2021). *Audit Committee Effectiveness and Audit Delay. Asian Review of Accounting, 29(1), 1–20.* https://doi.org/10.1108/ARA-09-2019-0182

Baltagi, B. H. (2021). *Econometric Analysis of Panel Data (6th Ed.). Springer*.

Boateng, A., Cai, H., Borgia, D., & Gang, B. (2022). *Ownership Concentration and Financial Reporting Timeliness. Accounting Research Journal, 35(4), 545–563.* https://doi.org/10.1108/ARJ-09-2021-0304

Dang, V. A., & Tran, M. (2022). *Financial Constraints and Disclosure Timeliness. International Review of Financial Analysis, 82, 102189*. https://doi.org/10.1016/j.irfa.2022.102189

Gupta, K., & Mahapatra, S. (2022). *Executive Characteristics and Financial Reporting Quality: Evidence from Asian Markets. Asian Review of Accounting, 30(4), 589–607.* https://doi.org/10.1108/ARA-09-2021-0172

Habib, A., Bhuiyan, M. B. U., Huang, H., & Miah, M. S. (2021). *Determinants of Audit Report Lag: A Meta-Analysis. International Journal of Auditing, 25(2), 308–330.* https://doi.org/10.1111/ijau.12215

Hassan, M. K., Karim, W., & Islam, A. (2021). *Debt Monitoring and Financial Reporting Quality. Journal of Contemporary Accounting & Economics, 17(3), 100287*. https://doi.org/10.1016/j.jcae.2021.100287

Hossain, M., & Taylor, P. (2020). *Determinants of Audit Report Lag. Accounting Forum, 44(3), 193–219.* https://doi.org/10.1080/01559982.2020.1735224

Khan, A., Muttakin, M. B., & Siddiqui, J. (2021). *Corporate Governance and Financial Reporting Timeliness: Evidence from Emerging Economies. Journal of Contemporary Accounting & Economics, 17(2), 100272*. https://doi.org/10.1016/j.jcae.2021.100272

Khoufi, N., & Khoufi, W. (2020). *Complexity and Reporting Delay. Accounting Research Journal, 33(6), 841–860*. https://doi.org/10.1108/ARJ-03-2019-0064

Lee, J. (2023). *CEO Demographic Attributes and Financial Disclosure Behavior. Accounting Research Journal, 36(2), 175–192*. https://doi.org/10.1108/ARJ-11-2022-0321

Liu, Y., & Sun, J. (2021). *CEO Characteristics and Disclosure Speed. Journal of Corporate Finance, 69, 102028*. https://doi.org/10.1016/j.jcorpfin.2021.102028

Mohamad-Nor, M. N., Shafie, R., & Wan-Hussin, W. N. (2020). *Audit Quality and Financial Reporting Timeliness. Asian Academy of Management Journal of Accounting and Finance, 16(2), 1–30.*

Nguyen, Q., Rahman, A., & Zhao, R. (2022). *Executive Traits and Financial Reporting Transparency. Corporate Governance: An International Review, 30(5), 623–640.* https://doi.org/10.1111/corg.12401

Nguyen, T. H., & Tran, P. H. (2022). *Organizational Complexity and Audit Delay: Evidence from ASEAN Countries. Asian Journal of Business and Accounting, 17(1), 85–110.*

Pham, H. T., Nguyen, T. T., & Hoang, L. (2022). *Leverage and Financial Reporting Behavior. Journal of Accounting in Emerging Economies, 12(4), 715–733.* https://doi.org/10.1108/JAEE-03-2021-0105.

Putri, R. A., & Prasetyo, A. B. (2023). *Leverage, Firm Complexity, and Financial Reporting Timeliness in Indonesia. Jurnal Akuntansi Dan Keuangan Indonesia, 20(1), 45–63.*

Sari, D. P., & Rahman, A. (2023). *Internal Control Effectiveness and Financial Reporting Timeliness: Evidence from Indonesia. Cogent Business & Management, 10(2), 2198765*. https://doi.org/10.1080/23311975.2023.2198765

Sugiyono. (2023). *Metode Penelitian Kuantitatif, Kualitatif, Dan R&D. Alfabeta*.

Widodo, T., & Siregar, S. V. (2022). *Operational Complexity and Audit Delay: Evidence from Listed Firms in Southeast Asia. Pacific Accounting Review, 34(3), 381–399*. https://doi.org/10.1108/PAR-05-2021-0078

Zhang, Y., Zhou, J., & Zhou, N. (2021). *Executive Characteristics and Reporting Outcomes. Journal of Business Finance & Accounting, 48(7–8), 1125–1150*. https://doi.org/10.1111/jbfa.12510