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DETERMINANTS OF FINANCIAL STATEMENT FRAUD IN THE ENERGY SECTOR LISTED ON THE INDONESIA STOCK EXCHANGE 2020-2024

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Abstract: Losses resulting from financial statement manipulation impact not only owners and internal management, but also investors, creditors, the government, and the public. This study analyzes industry characteristics, external pressures, justifications, and arrogant behavior by observing companies in the energy sector, including the oil, gas, and coal sub-sectors listed on the Indonesia Stock Exchange for 2020-2024. Sampling was conducted using a purposive sampling method on 16 companies out of 81 companies listed on the Indonesia Stock Exchange. The research data used were quantitative and secondary data. The analysis was conducted using a panel data regression method using Eviews software version 12. The results of the study indicate that there are indications of the influence of industry characteristics and justifications on fraud in manipulating financial statements, but there is no strong indication of the influence of external pressures and arrogant behavior on the occurrence of financial statement manipulation. There are loopholes in exploiting accounts receivable using fictitious sales, which impacts the recognition of profit/loss, as well as the justification of the company's accrual value which is engineered to achieve hidden goals. With a coefficient of determination of 20%, these factors were found to have a simultaneous influence on financial reporting fraud.

Keywords: financial statement fraud, nature of industry, external pressure, rationalization, arrogance, and panel data regression

INTRODUCTION

A company is an entity formed to carry out its business operations with the aim of generating profits. Companies operate within a legal and social framework that regulates interactions between stakeholders such as company owners, management, employees, consumers, investors, government, and the community. Companies not only function as profit-seeking tools, but also as parties that bear significant social and ethical responsibilities towards the surrounding environment (Scherer & Palazzo, 2011). From an accounting perspective, a company is an economic entity separate from its owners, which has the ability to conduct transactions, hold assets, and be responsible for the obligations it bears, and can be measured and reported financially, so that companies are always associated with the preparation and presentation of financial statements. According to Horngren, Sundem and Elliott (2013), financial statements published by companies contain important information for stakeholders in the company to make the right economic decisions.

Financial reporting fraud is often executed through earnings management , which is the use of judgment in financial reporting to alter supposed financial statements with the aim of misleading *stakeholders* or influencing contractual results that depend on accounting numbers (Healy & Wahlen, 1999). One of the main proxies for detecting manipulated earnings management is through the analysis of Discretionary Accruals (Jones, 1991). Discretionary accruals are accrual components under management control, encompassing subjective estimates and judgments. In the energy sector, the oil, gas, and coal subsector, this accrual practice is particularly vulnerable because oil, gas, and coal companies face unique challenges, such as capitalizing exploration costs and determining depletion, depreciation, and amortization (DDA) costs. Reserve estimates have been shown to be highly subjective and require managerial justification (Putri & Amalia, 2024). Justification or rationalization serves as a catalyst that transforms management's intention to

engage in earnings management into actual financial reporting fraud (Sanjaya & Mulyati, 2014). Without rationalization, pressure and opportunity alone may not be enough to push management over the ethical line.

The oil, gas, and coal energy subsector plays a crucial role in Indonesia's economic growth, providing the energy or fuel needed for mobilization and accommodation in production, distribution, and consumption, which form the lifeblood of the Indonesian economy. Amidst fluctuating global economic conditions and the high risk of adverse impacts resulting from fraud in this sector, intensive attention is required to address financial performance and operational management. Therefore, identifying the various determinants that trigger fraudulent financial reporting practices in this sector is crucial. This research is crucial to mitigate the risk of manipulation that could harm stability and hinder national economic growth and investor confidence in the Indonesia Stock Exchange.

LITERATURE REVIEW

Agency *Theory*

Agency Theory, popularized by Jensen and Meckling (1976), serves as a crucial *grand theory in understanding the relationship between various independent variables and fraudulent financial reporting* . The core of the theory that underpins this research lies in the separation between owners (*principals*) and managers (*agents*), where the principal delegates decision-making responsibility to the agent (management). This separation inherently creates a conflict of interest (*agency conflict*) because each party is assumed to act rationally to maximize their own utility and interests. In the context of financial reporting, management (agents) has superior access to information compared to shareholders (principals). This conflict triggers management to engage in behavior that is detrimental to the interests of the principal, one of which is through manipulation of financial statements (such as *earnings management* or *fraud*) to meet profit targets, secure bonuses under the guise of performance, or hide poor performance. Therefore, variables related to corporate governance mechanisms, such as the composition of the board of commissioners, managerial ownership, or audit committee, become important as contractual tools to minimize agency costs and direct management to present fair and transparent financial reports, thereby preventing potential fraud.

Positive *Accounting* Theory

Positive accounting theory is a theory developed by Watts & Zimmerman (1986, 1990) that attempts to explain and predict accounting phenomena based on empirical observations. In contrast to normative theory, which focuses on "how accounting should be implemented," positive accounting theory focuses on "why accounting is implemented as it is." Positive accounting theory is based on the assumption that managers, shareholders, and regulators are rational individuals who act in their own self-interest. This view states that managers' choice of accounting practices is not a neutral process but rather a strategic decision to maximize their utility in order to maximize their profits. This theory begins with the prediction that managers of companies with profit-generating plans tend to implement accounting methods that increase reported profits in the current period. Logically, increasing current profits will result in higher additional profits. This theory predicts that the closer a company is to violating accounting-based debt covenants, the more likely managers are to choose profit-generating accounting methods.

Stewardship *Theory*

Stewardship *theory* argues that managers act not based on personal motivation, but rather as dedicated stewards of the organization's interests (Davis, Schoorman & Donaldson, 1997). From this perspective, there is alignment of goals between management and stakeholders, where managerial behavior is based on honesty and collective responsibility. The implementation of this theory in the context of financial reporting emphasizes that the presentation of accurate information is a manifestation of managers' integrity in managing company resources. Therefore, manipulation or fraudulent practices are seen as deviations from the manager's role as a steward *who* should maintain public trust, particularly in the energy sector which has systemic impacts.

Pentagon Fraud Theory

The Fraud Pentagon Theory is an evolutionary extension of the theoretical framework in forensic accounting, moving beyond the limitations of *the Fraud Triangle Theory* (Cressey, 1953 in Tuanakotta, 2010). This model integrates more comprehensive dimensions related to the behavior, capabilities, and personality of the fraud perpetrator. This concept was initially developed through *the Fraud Diamond* (Wolfe & Hermanson, 2004) with the addition of Capability, and was later expanded by Albrecht et al. (2011) by including the element of Arrogance as a fifth pillar. Substantially, *the Fraud Pentagon* identifies

five elements that are simultaneously necessary for *Financial Statement Fraud* (FSF) to occur, asserting that FSF is the result of the convergence of motivation, opportunity, behavior, and personal characteristics (Albrecht et al., 2011).

Financial statements

Financial reports are a communication tool used by management as agents to provide information on a company's financial position, performance, and cash flow to stakeholders, particularly owners (*principals*) and investors (Kieso, Weygandt & Warfield, 2020). These reports are presented based on generally accepted accounting principles in Indonesia (Financial Accounting Standards or SAK), which require relevant, reliable, and comparable presentation. The financial reports presented are required to include a statement of financial position, a statement of comprehensive income, a statement of changes in equity, a statement of cash flows, and notes to the financial statements. However, agency theory reveals the existence of information asymmetry and conflicts of interest between agents and principals. Therefore, financial reports are vulnerable to practices called financial statement fraud. Management has incentives and opportunities to manipulate the figures presented to meet market expectations, secure compensation, or conceal poor performance. Therefore, the integrity of financial statement presentation, as detailed in SAK, serves as a theoretical bridge between corporate governance and potential fraud. Strong control mechanisms need to be implemented to ensure that the information presented truly reflects the company's condition and is not merely a tool for the agent's personal interests.

Financial Reporting Fraud

According to *Statement on Auditing Standards No. 99* in Suwena (2021), financial statement fraud *is* an intentional act that results in a material misstatement in the audited financial statements. According to *the Association of Certified Fraud Examiners* (ACFE, 2014), financial statement fraud can be defined as fraud committed by management resulting in a material misstatement in the audited financial statements.

Industry Characteristics

According to Summers and Sweeney (1998), as cited in Jalil, Hamid, and Nurleni (2024), industry characteristics are defined as standard indicators reflecting the optimal conditions of an industrial sector, particularly within the context of corporate entities. Industry characteristics reflect the unique attributes of each sector, with companies within the same sector striving to achieve similar ideal conditions (Prasetyo & Wulandari, 2017). The oil, gas, and coal industries typically involve large-volume sales contracts with installment payment systems, making receivables highly material in this sector due to the long lag between commodity delivery and settlement. Therefore, industry characteristics can be interpreted through an analysis of a company's accounts receivable. Opportunities for fraud arise from ideally favorable conditions, and favorable conditions can stem from industry characteristics, which often involve the application of accounting complexity and subjective company judgment in estimates (Marpaung & Siahaan, 2020). Mining, particularly in the energy sector and the oil, gas, and coal sub-sector, uses estimates to measure the likelihood of future mining production. If a company makes an overly optimistic estimate, it will impact future sales contracts and current revenue recognition, resulting in the recording of receivables. Industry characteristics can be observed through a company's accounts receivable ratio. This is because bad debts involve estimates that tend to be subjective. In some situations, management can exploit accounts receivable to manipulate financial statements. (Hutagalung, Wanialisa, Indriyati & Ekonomi, 2023).

External Pressure

According to Eksandy and Sari (2022), external pressure can be defined as the ability to encourage compliance with exchange listing requirements, debt repayment, or compliance with widely recognized debt agreements originating from external parties. Companies with high levels of *leverage* (debt ratios) indicate a reliance on debt to finance their operational activities. This condition puts pressure on management to manipulate the image to investors and creditors of the company's ability to repay debt (Satiman & Khuzaeni, 2025). This pressure is caused by the company's funding sources from external parties, such as investors and creditors (Puryati, Aurellya, Aulia & Ramadhan, 2024). This ability is demonstrated through the presentation of quality financial reports. Due to this pressure, management has the potential to manipulate financial reports to present a positive financial picture (Prasasti & Lastanti, 2024). According to Skousen (2008) in Jonathan and Wijaya (2022), one source of external pressure is the company's ability to repay debt and meet debt requirements in the short and long term. Based on Skousen's

opinion, in this study, the concept of *leverage* is measured using *the Debt-to-Assets Ratio* (DAR), where external pressure is proxied by *leverage*.

Justification

Justification (*rationalization*) is a key psychological or cognitive element in the Fraud Triangle theory, which refers to individual capabilities. In the context of financial statement fraud, justification is defined as the justification provided by fraudsters for their actions. Therefore, justification can be interpreted as a form of internal defense employed by fraudsters to make their actions morally acceptable for the benefit of the company (Achmadiyah & Hidayat, 2023). In the energy sector, oil, gas, and coal sub-sector, justification can be measured through the ratio of total accruals to total assets (TATA), this ratio indicates the flexibility and subjectivity in accrual accounting that makes it easier for management to justify financial statement manipulation (Salamah & Marliani, 2025). Based on the results of research conducted by Salamah & Marliani (2025), *rationalization* proxied by TATA has a positive but insignificant effect on financial statement fraud . The results of this study are in line with the results found by Natalia and Kuang (2023), where rationalization proxied by TATA has a positive but significant effect on financial statement fraud and suggests that the use of the accrual principle illustrates the rationalization carried out by management when committing fraud, where this is caused by increasing company profits based on the principle of recognizing unearned revenue.

Arrogance

Arrogance is identified as a critical psychological and personality dimension, replacing capability in the Fraud Diamond theory and developed into two specific elements in the Fraud Pentagon, namely competence and arrogance (Albercht et al., 2011). In the context of leadership, arrogance is a form of attitude, action, or behavior based on excessive self-confidence where a company leader feels that they have more capability in one or more responsibilities compared to others (Wolfe & Hermanson, 2004). Arrogance refers to an attitude of superiority and *entitlement* held by perpetrators, especially top management such as *Chief Executive Officers* (CEOs), where they feel immune to rules and believe that they can commit and conceal fraud without detection. In quantitative research, the arrogance dimension is often proxied by CEO *tenure* . The logic is that executives who serve for a long time are relatively likely to accumulate power, build strong internal networks, and develop a sense of superiority over the board of commissioners or auditors, so they feel unmatched and entitled to take greater accounting risks (Ginting, Nasution & Sari, 2024). CEO tenure *is* the period of time (usually measured in years) during which an individual serves as CEO of a company. In the context of financial statement fraud analysis, *CEO tenure* is used as a proxy for the arrogance dimension in the Fraud Pentagon model (Wolfe & Hermanson, 2004). Therefore, the longer the CEO's tenure, the higher the assumed level of arrogance and the greater the risk of financial statement fraud (Ginting et al., 2024).

Hypothesis

According to Sugiyono (2019), a hypothesis is defined as a temporary answer to a research formulation and is not yet based on empirical facts obtained through data collection. Therefore, its validity needs to be tested through research. The following are research hypotheses used for testing and proof.

Hypothesis 1: Industry characteristics influence financial reporting fraud.
Hypothesis 2: External pressure influences financial reporting fraud.
Hypothesis 3: Justification has an effect on financial reporting fraud
Hypothesis 4: Arrogance has no effect on financial reporting fraud.

RESEARCH METHOD

Research Object

The research object used is the energy sector companies in the oil, gas, and coal subsector listed on the Indonesia Stock Exchange for the period 2020 - 2024. The total number of energy sector companies in the oil, gas, and coal subsector listed on the Indonesia Stock Exchange is 81 companies. The energy sector companies in the oil, gas, and coal subsector are producers of transportation fuel products and raw materials used for infrastructure development.

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Population and Sampling Procedures

The population of companies in the energy sector, oil, gas, and coal subsectors listed on the Indonesia Stock Exchange is 81. This study did not use all of these companies in its entirety, but instead used a *purposive sampling method* (also known as *judgmental sampling*), a non-random sampling method based on subjective information relevant to the research objectives or problems. The research sample consisted of all companies in the energy sector, oil, gas, and coal subsectors, that met the following criteria:

1. Energy sector companies in the oil, gas and coal subsector that are consistently listed on the Indonesia Stock Exchange in 2020-2024
2. Energy sector companies in the oil, gas, and coal subsector that did not experience delisting on the Indonesia Stock Exchange during the 2020-2024 period.
3. Energy companies in the oil, gas, and coal subsector consistently publish comprehensive financial reports and annual reports on their official company websites and the Indonesia Stock Exchange website during the 2020-2024 period.
4. Annual financial reports of companies in the energy sector, oil, gas and coal sub-sectors, presented in Rupiah currency.

Data Types and Sources

The type of data used for this study is secondary data, obtained from external sources or published sources. The data used in this study are annual financial reports of energy companies in the oil, gas, and coal subsectors listed on the Indonesia Stock Exchange, sourced from the company's official website and the Indonesia Stock Exchange website.

Data Collection Procedures

The data collection procedure in this study was conducted using a documentation method, namely by collecting secondary data, data obtained from external sources such as official company websites and the Indonesia Stock Exchange website. Most of the literature used to support the study in this study consisted of research journals, previous research papers, and *network research* related to this research. The sampling method used in this study was non-random, because this study used the entire research population that met the predetermined criteria as the research sample.

Operational Definition and Measurement of Variables

Operational definitions aim to provide an explanation for each variable used as an observation tool, allowing the variables to play a specific role in a clearer measurement. The variables that make up this study are the dependent variable (y) and the independent variable (x). The operational definitions and measurements used for each variable to achieve the observation objectives are presented in the following table:

Table 1
Operational Definitions and Measurement of Variables

Variables	Operational Definition	Variable Measurement	Scale
Financial Reporting Fraud (y)	Financial reporting fraud is a material misstatement made intentionally to mislead users of financial reports, not caused by negligence or error with the intent to fabricate income, conceal debt, or manipulate accounting estimates.	M-Score = −4.840 + (0.920 × DSRI) + (0.528 × GMI) + (0.404 × AQI) + (0.892 × SGI) + (0.115 × DEPI) – (0.172 × SGAI) – (0.327 × LEVI) + (4,697 x TATA)	Ratio
RECEIVABLE (x_1)	This ratio is a metric used to measure accounts receivable based on sales between a certain period and the previous period to describe the company's performance.	*RECEIVABLE* = (Accounts Receivable (t) / Sales (t)) – (Accounts Receivable (t – 1) / Sales (t – 1))	Ratio
Debt To Asset Ratio / DAR (x_2)	This ratio is a solvency ratio that measures the percentage of a company's assets that are funded through debt, indicating the extent to which a company relies on external financing as measured by the amount of assets it owns.	DAR = Total Debt / Total Assets	Ratio
Total Accrual to Total	TATA is a quantitative proxy used to measure or detect earnings management or potential financial statement fraud. The accrual value reflects the	TATA = (Net Profit – Operating Cash Flow) / Total Assets	Ratio

Assets (TATA) (x 3)	difference between accounting net income (accrual basis) and operating cash flow (cash basis)		
CEO Tenure	CEO Tenure is the length of time a person has served as CEO. This measure can be used as an assumption of the level of arrogance, representing the accumulated power over time, to gauge the extent to which the arrogance dimension influences the level of financial reporting fraud.	*CEO Tenure* = End Year of Observation Period – Initial Year of Appointment	Ratio

Source: Data processed by the author, 2026.

Data Analysis Techniques

The data analysis technique in this study uses descriptive statistical analysis and panel data regression analysis with the help of Eviews software version 13. The use of panel data was chosen because it combines cross-section data *and* time-series data (*time-series* or *period*), so that it is able to provide more informative, varied, and efficient estimation results in detecting impacts that cannot be observed by *cross-section* or *time-series data* separately (Gujarati & Porter, 2012).

Descriptive Statistics

Descriptive statistics is a method that involves collecting, structuring, simplifying, and organizing data to make the data informative, easy to read, and understandable to those who need it. These statistics are limited to presenting descriptions or visualizations of the characteristics of the object being studied without the aim of generalizing data from the sample to the population. Descriptive statistics are needed to describe a set of spontaneous data so that it does not give the impression of inferential conclusions. Data in descriptive statistics are presented in the form of tables or diagrams, the data provides benchmarks such as the average value (*mean*), the lowest value (minimum), the highest value (maximum), and the standard deviation (*standard deviation*). The purpose of using this descriptive statistical analysis method is to provide information on the representation of each value that appears in relation to the variables being studied.

Panel Data Regression Model Estimation Test

The regression model estimation test was carried out with the aim of selecting the most appropriate model for processing panel data. A series of formal tests were carried out as follows:

1. Chow Test (*Likelihood Ratio Test*)
2. Hausman test
3. Lagrange Multiplier Test (*LM Test*)

Classical Assumption Test

The classical assumption test is conducted before testing and analyzing panel data regression. The classical assumption test includes several tests, namely the normality test, multicollinearity test, autocorrelation test, and heteroscedasticity test.

1. Normality Test
2. Multicollinearity Test
3. Autocorrelation Test
4. Heteroscedasticity Test

Panel Data Regression Analysis

Panel data regression analysis is a statistical model used to model the relationship between one dependent variable and one or more independent variables in data that has individual (company) characteristics or *cross-section* with *time series* . The use of panel data is considered capable of capturing the dynamics of changes in variables as well as differences in specific characteristics between individuals (Gujarati & Porter, 2012). The regression model is used to test the influence of industry characteristic variables proxied by the ratio of receivables (RECEIVABLE), external pressure variables proxied by total debt to total assets or *Debt to Asset Ratio* (DAR), justification variables proxied by total company accruals (TATA), and arrogance variables proxied by CEO tenure (*CEO Tenure*) on financial statement fraud. Mathematically, the panel data regression model is formulated with the following equation:

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$$Y_{it}=\alpha+\beta_1 X_{1it}+\beta_2 X_{2it}+\beta_3 X_{3it}+\beta_4 X_{4it}+U_{it}$$

Information:
Y_{it} = financial reporting fraud measured by the Beneish M-Score at company *i* in year *t*
α = constant or intercept
β_1 β_2 β_3 β_4 = regression coefficient of each independent variable
X_{1it} = industry characteristic variable/ *nature of industry* (RECEIVABLE)
X_{2it} = *external pressure* variable (DAR)
X_{3it} = *rationalization* variable (TATA)
X_{4it} = *arrogance* variable (*CEO Tenure*)
U_{it} = *error term* or error component between individual companies (*i*) and between times (*t*)

Hypothesis Testing

Hypothesis testing is used to verify a predetermined hypothesis based on the data obtained. Hypothesis testing includes three tests: the F test, the T test, and the coefficient of determination test.

RESULTS AND DISCUSSION

Data Collection Results

Research Data

The collected and analyzed data are sourced from the annual financial reports and annual reports of 16 mining industry companies in the energy sector, oil, gas, and coal subsectors, listed on the Indonesia Stock Exchange (IDX) for 2020-2024. The obtained data were then processed and produced independent variables needed for testing, including industry characteristics or *the nature of the industry* , proxied by the accounts receivable ratio (RECEIVABLE), external pressure, *proxied* by the debt to assets ratio (DAR), justification or rationalization, proxied by the total accrual to total assets ratio (TATA), and arrogance, proxied by the CEO tenure ratio (*CEO Tenure*). In addition, the data processing uses financial statement fraud, proxied by the Beneish Model Score formula, as the dependent variable. Research data for calculating all proxies is attached in the appendix. The following is a list of companies that meet the criteria for research data.

Table 1
Research Sample

Stock Code	Company name
AKRA	PT. AKR Corporindo Tbk
BESS	PT. Batulicin Nusantara Maritim Tbk
BSML	PT. Bintang Samudera Mandiri Lines Tbk
CNKO	Indonesia Energy Exploitation TBK
DWGL	PT. Dwi Guna Laksana Tbk
ELSA	Elnusa Tbk
FIRE	PT. Alfa Energi Investama Tbk
INPS	PT. Indah Prakasa Sentosa Tbk
COFFEE	PT. Mitra Energi Persada Tbk
PTBA	Bukit Asam Tbk
RUIS	Radiant Utama Interinsco Tbk
SGER	PT. Sumber Global Energi Tbk
SMMT	Golden Eagle Energy Tbk
SMRU	SMR Utama Tbk
TCPI	PT. Transcoal Pacific Tbk
TEBE	PT. Dana Brata Luhur Tbk

Source: Secondary data processed by the author, 2026.

Discussion

Descriptive Statistics

Table 2
Descriptive Statistics Results

	X1	X2	X3	X4	Y
Mean	-0.002624	0.639661	-0.076210	7.375000	-2.204719
Median	0.000953	0.531416	-0.064350	4,000,000	-2.544983
Maximum	0.163837	2.418443	0.208353	32,00000	5.948441

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Minimum	-0.204046	0.055444	-0.573506	0.000000	-5.824049
Std. Dev.	0.056958	0.478893	0.119917	7.746579	1.983988
Skewness	-0.396217	2.327478	-1.340285	1.685817	1.802041
Kurtosis	5.603035	8.814385	6.936025	5.207036	8.011161
Sum	-0.209958	51.17288	-6.096766	590,0000	-176.3775
Sum Sq. Dev.	0.256289	18.11772	1.136019	4740.750	310.9605
Observations	80	80	80	80	80

Source: Eviews output data 13, 2026.

Based on the descriptive statistics in Table 2 above, the number of observation samples used was 80 from a total of 16 companies.

Regression Model Estimation Test

Table 3
Regression Model Estimation Test Criteria

Testing	Hypothesis	Model (p-value < 0.05)
Chow Test	H_0 : CEM is selected H_α : FEM is selected	$H0_{is}$ rejected, FEM model is selected
Hausman test	H_0 : REM is selected H_α : FEM is selected	$H0_{is}$ rejected, FEM model is selected
Lagrange Multiplier Test	H_0 : CEM is selected H_α : REM is selected	$H0_{is}$ rejected, the REM model is selected

Source: Data processed by the author, 2026.

Chow Test

Table 4
Chow Test Results

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.484106	(15,60)	0.1405
Cross-section Chi-square	25.244779	15	0.0468

Source: Eviews output data 13, 2026.

Based on the Chow test results in Table 4.5, the Cross Section F p-value is 0.1405, indicating a p-value > 0.05, thus concluding that the CEM model is superior to the FEM model. Therefore, the model estimation test will be continued with the Lagrange Multiplier Test.

Lagrange Multiplier Test

Table 4.5
Lagrange Multiplier Test Results

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	0.700885 (0.4025)	0.266865 (0.6054)	0.967749 (0.3252)
Honda	-0.837189 (0.7988)	-0.516590 (0.6973)	-0.957266 (0.8308)
King-Wu	-0.837189 (0.7988)	-0.516590 (0.6973)	-0.843130 (0.8004)
Standardized Honda	-0.352873 (0.6379)	-0.243999 (0.5964)	-4.332180 (1.0000)
Standardized King-Wu	-0.352873 (0.6379)	-0.243999 (0.5964)	-3.710810 (0.9999)
Gourieroux, et al.	--	--	0.000000 (1.0000)

Source: Eviews output data 13, 2026.

the Breusch-Pagan p-value is 0.4025 or p-value > 0.05, so it can be concluded that the CEM model is better than the REM model. From the 3 (three) stages of model estimation tests for panel data regression, the best model has been determined, namely *the Common Effect Method* (CEM).

Classical Assumption Test

Classical assumption tests are essential to ensure that the observational model is suitable for analysis. In the regression model estimation test, the best model for panel data regression testing was determined to be *the Common Effects Method* (CEM). According to Napitupulu, Simanjuntak, Hutabarat, Damanik, Harianja, Sirait, & Tobing (2021), based on the CEM panel data regression model, the classical assumption tests performed include multicollinearity and heteroscedasticity tests.

Multicollinearity Test

Table 4.6
Multicollinearity Test Results

	X1	X2	X3	X4
X1	1.000000	-0.262981	0.358491	-0.031097
X2	-0.262981	1.000000	-0.417846	-0.142151
X3	0.358491	-0.417846	1.000000	0.252031
X4	-0.031097	-0.142151	0.252031	1.000000

Source: Eviews output data 13, 2026.

Based on the results of the multicollinearity test in table 4.8, the relationship or correlation between independent variables can be described as follows:

1. The correlation between industry characteristics (X1) and external pressure (X2) is -0.262981 < 0.85, so it can be concluded that there are no symptoms of multicollinearity between the two.
2. The correlation between industry characteristics (X1) and justification (X3) is 0.358491 < 0.85, so it can be concluded that there are no symptoms of multicollinearity between the two.
3. The correlation between industry characteristics (X1) and arrogance (X4) is -0.031097 < 0.85, so it can be concluded that there are no symptoms of multicollinearity between the two.
4. The correlation between external pressure (X2) and justification (X3) is -0.417846 < 0.85, so it can be concluded that there are no symptoms of multicollinearity between the two.
5. The correlation between external pressure (X2) and arrogance (X4) is -0.142151 < 0.85, so it can be concluded that there are no symptoms of multicollinearity between the two.
6. The correlation between justification (X3) and arrogance (X4) is 0.252031 < 0.85, so it can be concluded that there are no symptoms of multicollinearity between the two.

Based on the description of the relationship or correlation between the variables above, it can be concluded that all independent variables do not show symptoms of multicollinearity, so it can be said that the regression model used can be said to be suitable and passes the multicollinearity test.

Heteroscedasticity Test

Table 4.7
Heteroscedasticity Test Results

Dependent Variable: ABS(RESID)
Method: Panel Least Squares
Date: 01/19/26 Time: 00:56
Sample: 2020 2024
Periods included: 5
Cross-sections included: 16
Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.026763	0.278093	3.692163	0.0004
X1	2.037467	2.513229	0.810697	0.4201
X2	-0.135885	0.304623	-0.446075	0.6568
X3	-0.774575	1.294460	-0.598377	0.5514
X4	-0.010787	0.017682	-0.610053	0.5437

Source: Eviews output data 13, 2026.

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Based on the results of the heteroscedasticity test in table 4.9, it shows the probability value of the industry characteristic variable is 0.4201; external pressure is 0.6568; justification is 0.5514; and arrogance is 0.5437. Overall, the probability value of each variable is greater than 0.05 so it can be said that the regression model does not find symptoms of heteroscedasticity or can be said to be suitable for analysis to draw conclusions.

Panel Data Regression Analysis

Table 4.8
Panel Data Regression Test Results

Dependent Variable: Y
Method: Panel Least Squares
Date: 01/19/26 Time: 01:08
Sample: 2020 2024
Periods included: 5
Cross-sections included: 16
Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.540311	0.421737	-3.652302	0.0005
X1	9.381560	3.811398	2.461449	0.0161
X2	-0.014343	0.461971	-0.031047	0.9753
X3	5.554415	1.963093	2.829420	0.0060
X4	-0.028110	0.026815	-1.048279	0.2979

Source: Eviews output data 13, 2026.

Based on table 4.10, it shows the values to fill in the panel data regression model equation form. The following are the results of the logistic regression model equation with the addition of a constant value (α) and a regression coefficient (β).

$$Y=-1{,}5403+9{,}3815(X_1)-0{,}0143(X_2)+5{,}5544(X_3)-0{,}0281(X_4)+e$$

Description:
X1 = Industry characteristic variable (RECEIVABLE)
X2 = External pressure variable (DAR)
X3 = Justification variable (TATA)
X4 = Arrogance variable (*CEO Tenure*)
Y = Financial Report Fraud Variable (Beneish M-Score)

Hypothesis Testing

F Test (Simultaneous)

Table 4.9
F-Test Results (Simultaneous)

R-squared	0.246755	Mean dependent var	-2.204719
Adjusted R-squared	0.206582	S.D. dependent var	1.983988
S.E. of regression	1.767218	Akaike info criterion	4.037152
Sum squared resid	234.2295	Schwarz criterion	4.186028
Log likelihood	-156.4861	Hannan-Quinn criter.	4.096841
F-statistic	6.142301	Durbin-Watson stat	1.621923
Prob(F-statistic)	0.000249		

Source: Eviews output data 13, 2026.

Based on table 4.11, it shows a probability value (F-statistic) of 0.000249, because this value is smaller than 0.05, meaning that the variables of industry characteristics, external pressure, justification, and arrogance simultaneously influence financial report fraud.

T-test

Table 4.10
T-Test Results

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Dependent Variable: Y
Method: Panel Least Squares
Date: 01/19/26 Time: 01:08
Sample: 2020 2024
Periods included: 5
Cross-sections included: 16
Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.540311	0.421737	-3.652302	0.0005
X1	9.381560	3.811398	2.461449	0.0161
X2	-0.014343	0.461971	-0.031047	0.9753
X3	5.554415	1.963093	2.829420	0.0060
X4	-0.028110	0.026815	-1.048279	0.2979

Source: Eviews output data 13, 2026.

Based on table 4.12, the partial results of variable testing can be concluded as follows:

1. The probability value of industrial characteristics proxied by RECEIVABLE is 0.0161 < 0.05, meaning that the industrial characteristics variable has a significant effect on financial reporting fraud.
2. The probability value of external pressure proxied by DAR is 0.9753 > 0.05, meaning that the external pressure variable does not have a significant effect on financial reporting fraud.
3. The probability value of justification proxied by TATA is 0.0060 < 0.05, meaning that the justification variable has a significant effect on financial report fraud.
4. The probability value of arrogance proxied by *CEO Tenure* is 0.2979 > 0.05, meaning that the industry characteristics variable has a significant effect on financial reporting fraud.

Coefficient of Determination

Table 4.11
Results of the Determination Coefficient

R-squared	0.246755	Mean dependent var	-2.204719
Adjusted R-squared	0.206582	S.D. dependent var	1.983988
S.E. of regression	1.767218	Akaike info criterion	4.037152
Sum squared resid	234.2295	Schwarz criterion	4.186028
Log likelihood	-156.4861	Hannan-Quinn criter.	4.096841
F-statistic	6.142301	Durbin-Watson stat	1.621923
Prob(F-statistic)	0.000249		

Source: Eviews output data 13, 2026.

Based on the results of the determination coefficient in table 4.13, it shows that the Adjusted R-Squared value is 0.206582 or 20.65%, meaning that industry characteristics, external pressure, justification and arrogance are simultaneously able to explain the variation in financial statement fraud by 20.65%. This regression model can be said to have a relatively strong ability to explain variations in the dependent variable, while the remaining 79.35% of the dependent variable variation can be explained by other variables such as financial stability (Fadhilah & Ritonga, 2025; Satiman & Khuzaeni, 2025; Trisna, 2022), financial targets (Trisna, 2022; Yanti & Munari, 2021), ineffective monitoring (Puryati, Aurellya, Aulia & Ramadhan, 2024; Insani, 2023; Hidayat & Triyono, 2022; Lastanti, Murwaningsari & Umar, 2022; Trisna, 2022), and so on.

Discussion of Data Analysis Results

Based on the results of the tests conducted using logistic regression analysis through the results of the F test (simultaneous) and T test on the observation objects of companies in the energy sector, oil, gas and coal sub-sectors listed on the Indonesia Stock Exchange (IDX) for the 2020-2024 period, the following conclusions can be drawn.

Table 4.12
Summary of Research Results

Hypothesis	Variables	Prob.		Sig. Level	Hypothesis Test Results	Conclusion
T-test						
H_1	Industry Characteristics	0.0161	<	0.05	H_1 accepted	Significant Influence
H_2	External Pressure	0.9753	>	0.05	$H2_{is}$ rejected	No effect
H_3	Justification	0.0060	<	0.05	H_3 accepted	Significant

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						Influence
H_4	Arrogance	0.2979	>	0.05	H_4 accepted	No effect
Simultaneous F Test						
H_5	Industry Characteristics, External Pressure, Justification, Arrogance	0.00024	<	0.05	H_5 accepted	Simultaneous Effect
Against Financial Reporting Fraud						

Source: Data processed by the author, 2026.

The Influence of Industry Characteristics on Financial Reporting Fraud

Based on the test results, the industry characteristic variable proxied by RECEIVABLE shows a regression coefficient value of 9.3815 and the T-test has proven that industry characteristics partially have a significant effect on financial reporting fraud according to statistics with a probability value of 0.0161 < 0.05.

The Influence of External Pressure on Financial Reporting Fraud

Based on the test results, the external pressure variable proxied by DAR shows a regression coefficient value of -0.0143 and the T test proves that external pressure partially has no significant effect on financial reporting fraud according to statistics with a probability value of 0.9753 > 0.05.

The Effect of Justification on Financial Reporting Fraud

Based on the test results, the justification variable proxied by TATA shows a regression coefficient value of 5.5544 and the T test proves that partial justification has a significant effect on financial report fraud according to statistics with a probability value of 0.0060 < 0.05.

The Influence of Arrogance on Financial Report Fraud

Based on the test results, the arrogance variable proxied by *CEO Tenure* shows a regression coefficient value of -0.0281 and the T-test proves that arrogance partially has no significant effect on financial reporting fraud according to statistics with a probability value of 0.2979 > 0.05.

The Simultaneous Influence of Industry Characteristics, External Pressure, Justification, and Arrogance on Financial Report Fraud

Based on the results of simultaneous testing through the F Test (Simultaneous), the variables of industry characteristics, external pressure, justification, and arrogance together or simultaneously influence financial reporting fraud with a simultaneous probability value of 0.00024 < 0.05 and a coefficient of determination of 0.2065.

CONCLUSION

Based on the findings, testing, analysis, and discussion conducted regarding the influence of industry characteristics, external pressure, justification and arrogance on financial reporting fraud in energy sector companies in the oil, gas and coal subsector listed on the Indonesia Stock Exchange (IDX) for the 2020-2024 period, the following conclusions were reached:

1. Industry characteristics significantly influence financial reporting fraud. Deviations in accounts receivable balances that are inconsistent with sales growth are a major source of revenue manipulation or expense deferrals, leading to erroneous revenue recognition.
2. External pressure does not significantly influence financial statement fraud. External pressure is not a strong primary driver for management to commit fraud; instead, it can be considered a reasonable funding strategy for operations and does not threaten the company's financial stability from an external perspective.
3. Justification significantly influences financial statement fraud. Management justifies the recognition of high accrual earnings when not accompanied by strong cash flow. Aggressive accrual practices reflect the possibility of a management environment that facilitates the justification of manipulation due to the flexibility and subjectivity of financial statements.
4. Arrogance has no significant effect on financial reporting fraud. A CEO's longer tenure does not provide a strong basis for developing an arrogant attitude that leads to fraud . In general,

companies in the oil, gas, and coal sectors do not have a consistent, relatively high level of tenure that could trigger fraudulent practices or increase indications of fraud in financial reporting.

5. Industry characteristics, external pressure, justification, and arrogance have a significant influence on financial reporting fraud with a contribution of 20.65%, while the remainder is influenced by other factors outside the research model.

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