



DO NOT JUDGE A BOOK BY ITS COVER: THE INFLUENCE OF CEOS MASCULINITY AND RELIGIOSITY ON FINANCIAL STATEMENT FRAUD

Frandy Efraim Fritz Karundeng

University of Sopron, Faculty of Economics

Economics and Management Doctoral School, Hungary

e-mail: frandykarundeng@gmail.com

ORCID: 0000-0003-3856-8753

Zsuzsanna Szelés

University of Sopron, Faculty of Economics

Economics and Management Doctoral School, Hungary

e-mail: szeles.zsuzsanna@uni-sopron.hu

ORCID: 0000-0001-7912-2008

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Abstract

Research background: Indonesia continues to encounter significant challenges in eradicating fraud, particularly in the context of financial statement fraud. This study contributes to the literature by introducing a novel perspective on the determinants of fraudulent activities, focusing on biological and psychological factors.

Purpose: This paper examines the influence of CEOs' masculinity and religiosity on the likelihood of financial statement fraud.

Research methodology: The study population consists of mining companies listed on the Indonesia Stock Exchange (IDX) between 2018 and 2022. Data analysis was conducted using STATA 17.0, and hypothesis testing employed the marginal effects of Logit regression.

Results: The findings reveal that CEOs with pronounced masculine behavior are more likely to engage in accounting fraud. However, religiosity appears to attenuate this likelihood.

Novelty: This study advances the field of accounting fraud and behavioral accounting research, by addressing gaps related to the biological and psychological characteristics associated with fraudulent financial reporting. Furthermore, the findings provide practical implications for both companies and

investors, emphasizing the importance of considering individual behavior as well as religiosity when appointing CEOs or making investment decisions.

Keywords: fraud, financial statements, masculinity, masculine face, religiosity

JEL classification: G30, G32, G38, G41

Introduction

Globally, financial statement fraud is recognized as the most costly scheme of corporate fraud, with median losses of approximately USD 766,000 per case (Association of Certified Fraud Examiners [ACFE], 2024). Such fraud is most often committed by senior executives, who possess both the authority and discretion to influence reporting practices (Bouaziz et al., 2020). As the primary decision-makers, Chief Executive Officers (CEOs) have the ability to shape disclosures in financial statements to protect corporate reputation and meet stakeholder expectations (Raharjo et al., 2023; Kim et al., 2022). Consequently, CEOs play a pivotal role in earnings management and fraudulent reporting (Prasetyo et al., 2022; Kamiya et al., 2018).

Building on the upper-echelon theory, research shows that executives' personal behavior strongly influences leadership style, decision-making, and organizational outcomes (Harymawan et al., 2023; Cai et al., 2011). Increasingly, accounting studies highlight the predictive value of biological and psychological characteristics in understanding financial reporting behavior (Jia et al., 2014; Davidson et al., 2013).

Individual behavior is initially shaped by biological factors, such as masculinity (Harymawan et al., 2023; Kim et al., 2022). Masculinity, influenced by the steroid hormone testosterone, manifests through neural mechanisms and is typically more pronounced in males due to higher testosterone levels during adolescence (Jia et al., 2014; Kim et al., 2022). Masculinity has been linked to aggression, competitiveness, and risk-taking behavior that may enhance performance but also elevate the likelihood of reckless decision-making (Tjaraka et al., 2022; Prasetyo et al., 2022; Harymawan et al., 2023). Prior studies associate masculine behavior with aggressive actions, disregard for risk, and a heightened propensity for financial fraud (Jia et al., 2014; Kamiya et al., 2018). When intertwined with the pursuit of social status, masculinity may further motivate men to manipulate financial statements to preserve reputational superiority (Jia et al., 2014). Masculinity also manifests physically, particularly in facial structure. The facial width-to-height ratio (fWHR) has been shown to correlate with

masculine behavior and is thus employed in this study as a proxy for biological masculinity (Jia et al., 2014; Kim et al., 2022).

In contrast, religiosity has been widely recognized as a moderating factor that encourages ethical conduct and risk aversion. Religious individuals are generally more conservative in decision-making and less likely to engage in fraudulent behavior (Cai et al., 2019; Said et al., 2018). Prior research suggests that CEOs with strong religious backgrounds exhibit greater transparency and risk avoidance (Chen et al., 2016), and religiosity has been shown to act as a safeguard against workplace fraud (Purnamasaria, Amalia, 2015). In this study, religiosity is operationalized through CEOs' educational background, particularly attendance at religion-affiliated institutions, which are believed to shape moral standards and personal values (Cai et al., 2019).

The Indonesian context provides a particularly compelling setting for this investigation. In 2023, ACFE reported that Indonesia ranked third in the Asia-Pacific region for fraud cases, with 25 recorded incidents. For example, high-profile cases include PT Garuda Indonesia's revenue recognition manipulation and PT Adaro Tbk's transfer pricing scheme (Ahmad et al., 2022; Surifah, 2023). Notably, 44.87% of 78 documented fraud cases in Indonesia involved presidents, directors, and commissioners (Jaswadi et al., 2022). In Indonesia, the common motives for falsifying a company's financial statements are to support and ensure the success of the new business strategies programmed by top management and, at the same time, to secure their position and maintain their reputation (Jaswadi et al., 2022).

Despite its reputation as one of the most religious countries in the world (World Values Survey, 2023), Indonesia continues to experience high levels of corporate fraud. Moreover, ACFE (2024) reported that men account for 74% of fraud cases, with the mining industry experiencing the highest median losses – around USD 550,000 per case. These conditions make male CEOs in Indonesia's mining sector, listed on the Indonesia Stock Exchange (IDX), an especially relevant population for study.

By investigating the influence of CEOs' facial masculinity and religiosity on financial statement fraud, this study offers a novel contribution to the understanding of financial statement fraud by linking biological behavior and religiosity. The remainder of this paper is structured as follows: the theoretical framework and hypotheses are presented first, followed by the research methodology, data collection, and analysis. The paper concludes with a discussion of findings and their theoretical and practical implications for accounting fraud and investigation, behavioral accounting, and corporate governance and ethics.

1. Literature review and hypotheses development

Upper Echelons Theory

According to the Upper Echelons Theory proposed by Hambrick and Mason (1984), CEOs' background characteristics shape their strategic choices, which subsequently influence firm performance and economic outcomes, including financial growth, investment decisions, and tax compliance (Harymawan et al., 2023). Cyert and March (1966) emphasized that behavioral factors play a more critical role than mechanical processes in complex strategic decision-making. Similarly, Eisenhardt and Bourgeois (1989) argued that rational models are inadequate in addressing the rapid pace of dynamic business environments, where incremental models are more effective.

Masculinity

Testosterone levels are closely associated with human behavior (Mehta, Beer, 2010). Prior studies have demonstrated that testosterone, through neural mechanisms, influences masculine behavior such as aggression, dominance, and risk-taking (Kamiya et al., 2018). Testosterone also shapes male facial development, beginning in infancy and becoming more pronounced during adolescence, particularly in the width between the cheekbones (Jia et al., 2014; Asyik et al., 2022; Tjakra et al., 2022). During cranial development, testosterone contributes to bone growth, increasing the bizygomatic width (the distance between cheekbones) (Kim et al., 2022; Stirrat, Perrett, 2011). The degree of testosterone exposure influences facial masculinity (Asyik et al., 2022). Empirical evidence further confirms a correlation between testosterone levels and the facial width-to-height ratio (fWHR), which serves as a physical indicator of masculinity (Lefevre et al., 2013).

Religiosity

Religiosity refers to an individual's devotion to and practice of religious values (Mokhlis, 2010). These values are internalized into daily behavior (Ashiq, 2004), guiding individuals to act consistently with their beliefs and moral principles (Purnamasari, Amaliah, 2015). Beyond personal conduct, religiosity has been linked to broader economic development by encouraging productive and ethical behavior (Barro, McCleary, 2003). Educational experiences, particularly during higher education, play an important role in shaping moral standards. For instance, students enrolled in church-affiliated higher education institutions (HEIs) have been

found to exhibit stronger moral behavior compared to peers in secular institutions (Pascarella, Terenzini, 1991; Cai et al., 2011).

Financial statement fraud

Financial statement fraud involves intentional misstatements or irregularities in financial reporting (Ghozali et al., 2019). Such misstatements may include both deliberate manipulations and errors that violate accounting standards (Kwok, 2005). According to ACFE (2024), fraud can be categorized into three main schemes: financial statement fraud, asset misappropriation, and corruption. Among these, financial statement fraud accounts for the most severe financial losses globally. Common methods include fictitious revenues, improper asset valuations, understated liabilities, and overstated expenses (ACFE, 2024).

1.1. Masculinity and financial statements fraud

Masculinity is commonly associated with aggression, social dominance, and risk-taking (Kim et al., 2022; Kamiya et al., 2018). CEOs who exhibit such behaviors often display aggressive and risk-tolerant behaviors, which may drive them to cross regulatory boundaries in the pursuit of superior performance (Wong et al., 2011). The desire to sustain high achievement can motivate CEOs to engage in accounting manipulation to preserve their reputation as “superstar” leaders (Eisenegger et al., 2010; Jia et al., 2014). Empirical studies confirm this association. Kim et al. (2022) found that CEOs with masculine facial structures (measured by high fWHR) are more prone to commit fraud than their lower-fWHR counterparts. Supporting evidence from Harymawan et al. (2023) and Mills and Hogan (2020) shows that higher fWHR correlates with riskier financial decisions, including tax avoidance. While masculine CEOs may also generate positive outcomes, such as higher returns on assets (Kim et al., 2022), other studies suggest they are more likely to manipulate accounting to maintain performance and status (Zhang et al., 2023; Kamiya et al., 2019). Harymawan et al. (2023) further argue that highly masculine CEOs may resort to fraudulent practices to outperform rivals and consolidate control.

H1: The more masculine the CEO, the higher the possibility of committing financial statement fraud.

1.2. Religiosity and financial statements fraud

Religiosity shapes individual behavior by embedding moral and ethical values into decision-making (Cai et al., 2011; Said et al., 2018). Religious individuals are guided by spiritual

principles that promote honesty and ethical conduct (Chen et al., 2016). Prior studies demonstrate that religiosity strengthens professional commitment, discourages accounting irregularities, and enhances fraud prevention within organizations (Purnamasari & Amalia, 2015; Said et al., 2018). Religious values also cultivate risk aversion and transparency, encouraging managers to avoid fraudulent practices and manage companies more ethically (Shu et al., 2012). Empirical evidence consistently supports the role of religiosity in mitigating fraud (Cai et al., 2011; Chen et al., 2016; Shu et al., 2012; Said et al., 2018). In this study, religiosity is measured through CEOs' educational background, specifically attendance at religion-affiliated schools or higher education institutions, which are shown to reinforce moral standards.

H2: The more religious the CEO, the lower the possibility of committing financial statement fraud.

1.3. Moderating variable and the relationship between masculinity and financial statement fraud

CEO behavior is shaped by both biological and psychological factors. Masculinity, a biological behavior, is positively associated with financial statement fraud (Kim et al., 2022; Kamiya et al., 2018; Zhang et al., 2023). In contrast, religiosity, a psychological factor, exerts a negative effect, reducing the likelihood of financial statement fraud (Cai et al., 2011; Said et al., 2018). Thus, while masculinity increases the probability of fraud, religiosity counteracts this tendency by instilling ethical restraint. Accordingly, this study proposes that religiosity moderates the relationship between masculinity and financial statement fraud, weakening the positive association between masculine behavior and financial statement fraud.

H3: Religiosity moderates the relationship between masculinity and financial statement fraud.

2. Research methodology

2.1. Research data and methodology

This study employs a quantitative research method, utilizing a statistical analysis to examine the relationship between CEO characteristics and financial statement fraud (Asyik et al., 2022). Financial and non-financial data were collected from annual reports and financial statements available on company websites and the Indonesia Stock Exchange (IDX). Additional financial data were obtained from the Osiris database, while CEO images and educational

backgrounds were sourced from official company reports, Google searches, and related websites.

The research population consists of mining companies listed on the IDX during 2018–2022. Samples were selected using purposive sampling, with the following criteria: availability of (1) Benish M-Score data, (2) CEO images, and (3) CEO educational background information. Control variables were included to minimize bias, covering both CEO characteristics (age, busyness, financial and auditing experience) and firm characteristics (number of directors, commissioners, audit committee members, and use of Big 4 auditors). Data were analyzed using binary Logit regression, with hypothesis testing conducted in STATA version 17.0. The regression equation is presented as follows:

$$\begin{aligned} \text{Benish M-Score}_{it} = & \beta_0 + \beta_1 fWHR + \beta_2 EB_{i,t} + \beta_3 fWHR \times EB_{i,t} + \beta_4 CEOAGE_{i,t} + \beta_5 CEOBUSY_{i,t} + \\ & + \beta_6 CEOFIN_{i,t} + \beta_7 CEAUD_{i,t} + \beta_8 CEODIRSIZE_{i,t} + \beta_9 COMMSIZE_{i,t} + \\ & + \beta_{10} CEOAUDCOMSIZE_{i,t} + \beta_{11} CEOBIG4_{i,t} + \varepsilon_{i,t} \end{aligned}$$

2.2. Operational definitions and measurements

Financial statements fraud

The dependent variable, financial statement fraud, was measured using the Benish M-Score model (Benish et al., 2012). The model incorporates five financial ratios: Days Sales in Receivables Index (DSRI), Gross Margin Index (GMI), Asset Quality Index (AQI), Sales Growth Index (SGI), and Depreciation Index (DEPI). A company is classified as engaging in financial manipulation, coded 1 if the M-Score is greater than -2.2 ; otherwise, it is coded 0.

$$M = -6.065 + 0.823 \text{ DSRI} + 0.906 \text{ GMI} + 0.593 \text{ AQI} + 0.717 \text{ SGI} + 0.107 \text{ DEPI} \quad (2)$$

Masculinity

CEO masculinity, the first independent variable, was proxied by the facial width-to-height ratio (fWHR) (Jia et al., 2014). The fWHR is calculated as the ratio of bizygomatic width (distance between cheekbones) to the upper facial height (distance from the midpoint of the eyebrows to the upper lip) (Harymawan et al., 2023). Female CEOs were excluded since fWHR has been validated only for males (Jia et al., 2014). ImageJ software and an AI-based fWHR calculator were used to obtain precise measurements. Two independent researchers manually calculated fWHR using ImageJ, and the median of the three results (two manual and one automated) was adopted. To ensure validity, only high-resolution, front-facing CEO images

with clearly visible facial landmarks were used. An example of the measurement procedure is presented in Figure 1.

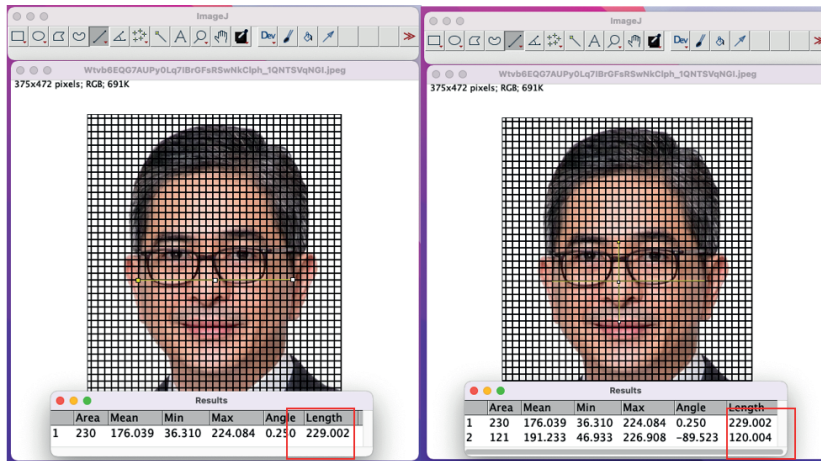


Figure 1. Measurement of fWHR

Source: Annual Report of Indika Energy, Tbk (INDY), CEO Mr. Arsjad Rasjid (2024).

Religiosity

Religiosity, the second independent variable, was measured using CEOs' educational backgrounds (Pascarella, Terenzini, 1991). Following Cai et al. (2011, 2021), religiosity was proxied by attendance at religion-affiliated higher education institutions (HEIs) or high schools. This operationalization addresses the absence of direct religiosity data. Cai et al. (2021) further provide justification, noting that religious individuals or families are more likely to enroll in religion-affiliated institutions. Religiosity was coded as a dummy variable, with 1 assigned if the CEO attended a religion-affiliated institution, and 0 otherwise. Information was gathered from company annual reports, HEI websites, and supplemental online searches.

Control Variable

Control variables included both CEO and firm characteristics. CEO-level controls were: age (CEOAGE), busyness (CEOBUSY; number of positions held), financial experience (CEOFINEXP; coded 1 if present, 0 otherwise), and auditing experience (CEOAUDEXP; coded 1 if present, 0 otherwise). Firm-level controls were: board size (DIRSIZE), commissioner size (COMMSIZE), audit committee size (AUDCOMSIZE), and auditor type (BIG4; coded 1 if audited by a Big 4 firm, 0 otherwise).

3. Results

3.1. Descriptive statistics

The research population comprises 47 mining companies listed on the Indonesia Stock Exchange (IDX) from 2018 to 2022, resulting in 151 observations. Some observations were excluded due to missing annual and financial reports, unclear and inaccurate CEO photographs, or unverified religious educational backgrounds. Table 1 presents the descriptive statistics of the final sample.

Table 1. Descriptive Statistic Test

Variable	N	Mean	Std. Dev	Min	Max
Benish M-Score (Y)	151	0.2450	0.4315	0	1
fWHR (X)	151	1.9907	0.1564	1.62	2.44
Religious (M)	151	0.3709	0.4846	0	1
CEOAGE	151	55.808	9.5657	28	84
CEOBUSY	151	0.8543	0.3540	0	1
CEOFINEXP	151	0.2252	0.4191	0	1
CEOAUDEXP	151	0.0397	0.1960	0	1
CEODIRSIZE	151	4.6821	1.7141	2	11
CEOCOMMSIZE	151	4.6225	1.7078	2	10
CEOAUDCOMSIZE	151	3.2185	0.5525	1	6
BIG4	151	0.4503	0.4992	0	1

Source: STATA results (2024).

The average Benish M-Score indicates that 24% of firms are likely to engage in financial statement fraud, suggesting that nearly one-quarter of the sample shows signs of fraud. The mean facial width-to-height ratio (fWHR), representing CEO masculinity, is 1.9974 (SD = 0.1630), ranging from 1.62 to 2.65. The lowest fWHR was recorded for Mr. Albert Saputro (PT Merdeka Copper Gold Tbk.), and the highest for Mr. Arfyan Arifin (PT Bukit Asam Tbk.). Approximately half of the CEOs (49.67%) are classified as masculine-faced.

The average CEO age is 56 years, with a range of 28 to 84. A majority (85%) hold multiple professional positions outside their primary company. Only 22.53% have finance-related experience, while 3.97% possess auditing experience. Regarding external auditor, 45.03% of firms were audited by Big 4 accounting firms. On average, the number of directors and commissioners per firm is five, and audit committees typically consist of three members.

3.2. Logit Regression

A binary Logit regression model was employed to estimate the probability of financial statement fraud (coded as 1) relative to non-fraud (coded as 0). This method is appropriate for examining the relationship between a dichotomous dependent variable and continuous or categorical independent variables. The regression equation is expressed as follows:

$$P_i = \frac{1}{1 + e^{-Z_i}} = \frac{e^z}{1 + e^z} \quad (3)$$

Table 2 reports the regression results. The fWHR (X) significantly predicts financial statement fraud (Y) at the 1% level ($p = 0.009$). Religiosity (M) and the interaction term ($X \times M$) are also significant at the 5% level ($p = 0.029$ and $p = 0.027$, respectively). CEO financial experience (CEOFINEXP) is significant at the 5% level ($p = 0.042$), while other control variables show no statistical significance.

Table 2. Logit regression

Logistic regression	Number of obs = 151 LR chi2(11) = 18.32 Prob > chi2 = 0.0744 Pseudo R2 = 0.1090		
Log likelihood = -74.918062			
Benish M-Score (Y)	Coefficient	Std. err.	P > z
fWHR (X)	4.5484	1.74100	0.009**
Religious (M)	12.6741	5.81480	0.029*
fWHR*Religious	-6.4193	2.89510	0.027*
CEOAGE	0.0253	0.02243	0.258
CEOBUSY	1.2816	0.71830	0.074
CEOFINEXP	0.0642	1.19930	0.042*
CEOAUDEXP	2.4332	0.56940	0.910
CEODIRSIZE	-0.2725	0.20540	0.185
CEOCOMMSIZE	-0.2778	0.17180	0.106
CEOAUDCOMSIZE	0.3773	0.42140	0.371
BIG4	0.4645	0.51900	0.371
_cons	-11.7854	4.04770	0.004**

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Source: STATA results (2024).

3.3. Odds ratio and marginal effects calculation

Despite being able to indicate the significance of influences between dependent and independent variables, the coefficient value cannot be interpreted. Therefore, further calculations are needed. Odds Ratio and Marginal Effects calculations are then used to interpret the probabilities and coefficient values. The Odds Ratio calculation result is shown in Table 3.

Table 3. Odds Ratio

Benish M-Score (Y)	Odds Ratio	Std. err.	z
fWHR (X)	94.4770	164.4800	2.61
Religious (M)	319,354.3000	1,856,966.0000	2.18
fWHR*Religious	0.0016	0.0047	-2.22
CEOAGE	1.0257	0.0231	1.13
CEOBUSY	3.6024	2.5874	1.78
CEOFINEXP	11.3950	13.6660	2.03
CEOAUDEXP	1.0664	0.6072	0.11
CEODIRSIZE	0.7615	0.1564	-1.33
CEOCOMMSIZE	0.7574	0.1302	-1.62
CEOAUDCOMSIZE	1.4583	0.6146	0.90
BIG4	1.5911	0.8259	0.89
_cons	7.62e-1	0.0000	-2.91

Note: _cons. estimates baseline odds.

Source: STATA results (2024).

The Odds Ratio indicates the likelihood of financial statement fraud when an independent variable increases by one unit. An OR greater than 1 implies a higher probability, whereas an OR less than 1 implies a lower probability. Results show that higher fWHR increases the likelihood of fraud, while religiosity decreases it when interacted with masculinity. Hereafter, the calculation of the Marginal Effects is needed to decide the most represented coefficient value. Table 4 shows the calculation of the Marginal Effects after Logit regression.

Table 4. Marginal Effects after Logit Regression

Y = Pr (VAR_Y) (predict) = 0.2071			
Variable	dy/dx	P > z	X
fWHR (X)	0.7470	0.006**	1.9907
Religious (M)	0.9963	0.000***	0.3709
fWHR*Religious	-1.0542	0.023*	0.7476
CEOAGE	0.0042	0.252	55.8080
CEOBUSY	0.1591	0.013*	0.8543
CEOFINEXP	0.5382	0.020*	0.2252
CEOAUDEXP	0.0107	0.911	0.0397
CEODIRSIZE	-0.0447	0.172	4.6821
CEOCOMMSIZE	-0.0456	0.099	4.6225
CEOAUDCOMSIZE	0.0620	0.369	3.2185
BIG4	0.0773	0.369	0.4503

* p < 0.05; ** p < 0.01; *** p < 0.001.

Source: STATA results (2024).

Marginal Effects further clarify the magnitude of these relationships. On average, a one-unit increase in fWHR raises the probability of fraud by 74.70%. A one-unit increase in religiosity increases the probability by 99.63%. However, when masculinity interacts with religiosity, the probability decreases by 1.0542. Firm-level characteristics also show modest effects: larger boards of directors and commissioners reduce fraud probability, while other control variables exhibit positive but less significant influences.

Subsequently, the masculinity and religiosity variables, as well as their interaction, remain statistically significant. The negative coefficient of the interaction term confirms that religiosity moderates the positive association between masculinity and financial statement fraud. Among the controls, only CEO busyness and financial experience show significance.

3.4. Goodness of Fit Test (Hosmer-Lemeshow Test)

The Hosmer-Lemeshow test was used to assess model fit, given the limited robustness of pseudo R² measures in Logit models. Results indicate a good fit: the number of observations matches the number of covariate patterns (151), and the chi-square probability exceeds 0.05, leading to failure to reject the null hypothesis. Thus, the model is considered adequately fitted

to the data. The measures of fitness of Logit Regression using the Hosmer-Lemeshow are visible in Table 5.

Table 5. The Goodness of Fit Test of Logit Regression using the Hosmer-Lemeshow Test

Goodness-of-fit test after logistic model Variable: VAR_Y	
Number of observations	= 151
Number of covariate patterns	= 151
Pearson chi2(139)	= 152.49
Prob > chi2	= 0.2050

Source: STATA results (2024).

3.5. Sensitivity and specificity test

The Sensitivity and Specificity test is calculated to find the indication of a good-fitting model through the sensitivity and specificity value and without analyzing the R^2 value. Based on the test results, the sensitivity value is 16.22%, which means that the observation of negative results is stated correctly by 16.22%. It is essential to balance sensitivity with specificity which measure true negative rate. On the other hand, the specificity indicates that the observation of positive results is stated correctly by 99.12%. Overall, the model achieves an accuracy rate of 78.81%. Table 6 presents the full results.

Table 6. The Sensitivity and Specificity Test

Classified + if predicted $\Pr(D) \geq 0.5$ True D defined as VAR_Y != 0		
Sensitivity	$\Pr(+ D)$	16.22%
Specificity	$\Pr(- \sim D)$	99.12%
Positive predictive value	$\Pr(D +)$	85.71%
Negative predictive value	$\Pr(\sim D -)$	78.47%
False + rate for true $\sim D$	$\Pr(+ \sim D)$	0.88%
False – rate for true D	$\Pr(- D)$	83.78%
False + rate for classified +	$\Pr(\sim D +)$	14.29%
False – rate for classified –	$\Pr(D -)$	21.53%
Correctly classified	78.81%	

Source: STATA results (2024).

4. Discussion

4.1. Masculinity and Financial Statements Fraud

This study supports the hypothesis (H1) that CEO masculinity has a significant positive effect on the likelihood of financial statement fraud. The findings reinforce evidence that biological factors, such as testosterone-driven facial masculinity (measured through facial width-to-height ratio, fWHR), influence behavior (Kim et al., 2022; Tjakra et al., 2022). Masculine behavior is commonly associated with aggressiveness, risk tolerance, and competitive decision-making aimed at maintaining dominance and social status (Mills, Hogan, 2020). These results align with the upper-echelon theory, which emphasizes the role of executives' characteristics in shaping organizational outcomes (Hambrick, Mason, 1984).

The positive coefficient indicates that higher masculinity is associated with a greater probability of financial misreporting. Descriptive statistics show that nearly half of the CEOs in the sample exhibit masculine facial features, suggesting an increased risk of manipulation within this group. These findings corroborate prior studies linking facial masculinity with financial misreporting and risky decision-making, including accounting irregularities (Zhang et al., 2023; Harymawan et al., 2023; Kamiya et al., 2019). Wong et al. (2011) similarly noted that financial violations may be tolerated if CEOs deliver high profits and business success.

4.2. Religiosity and Financial Statements Fraud

The results show that religiosity significantly influences financial statement fraud, extending the upper-echelon theory by confirming that decision-making is shaped by both biological and psychological factors (Hambrick, Mason, 1984; Kim et al., 2022). Religiosity, proxied by a CEO's religious educational background, is typically expected to promote ethical behavior and reduce manipulation (Chen et al., 2016; Mokhlis, 2020).

However, this study uncovers a paradox: religiosity exhibits a positive direct effect on financial statement fraud, indicating that CEOs with religious education may still engage in manipulation. Several contextual explanations may account for this result. First, CEOs with financial expertise may exploit their skills to conceal irregularities. Second, 85% of the sample CEOs are classified as "busy," holding multiple external roles that limit oversight capacity. Subsequently, these findings align with Kim et al. (2022), who argue that under financial pressure, CEOs may rationalize fraud as necessary for corporate survival, even when guided by religious principles. In addition, in this study, most of the CEOs in the mining industry, or 63% of them, do not have a religious educational background. Most universities or higher

educational institutions that offer mining technique study programs do not have religious affiliations or as public universities.

4.3. Moderating Variable and the Relationship between Masculinity and Financial Statement Fraud

This study further finds that religiosity moderates the relationship between masculinity and financial statement fraud. Consistent with the notion that individual characteristics are shaped by both biological and psychological factors (Harymawan et al., 2023; Cai et al., 2019), religiosity significantly weakens the positive effect of masculinity on fraudulent behavior. In other words, while masculine CEOs are more likely to engage in aggressive and risky decision-making, religiosity reduces the probability of financial misreporting by curbing such tendencies. Thus, religiosity serves as an important mitigating factor against the negative implications of masculine behavior in executive decision-making.

Conclusions

This study examines the relationship between CEOs' facial masculinity, religiosity, and financial statement fraud in mining companies listed on the Indonesian Stock Exchange during 2018–2022. The findings reveal that CEOs with higher levels of masculinity are more likely to manipulate financial statements. Similarly, CEOs with religious educational backgrounds show a significant correlation with fraudulent reporting. Notably, religiosity attenuates the positive association between masculinity and fraud, suggesting a moderating role in constraining aggressive or risk-prone tendencies.

The study offers new theoretical insights into the accounting fraud literature by integrating biological and psychological factors into the analysis of financial statement fraud. From a practical perspective, firms should exercise caution when appointing CEOs whose behavioral tendencies – such as risk-seeking and aggressiveness linked to masculinity – may increase the likelihood of fraudulent practices, even though such behavior may also drive higher returns. At the same time, intangible factors such as religiosity appear to mitigate these risks, reducing the probability of accounting fraud. For future research, CEO demographic characteristics – such as age, and educational backgrounds in accounting or business – should be examined to better understand their influence on accounting fraud and related practices, including tax avoidance.

In terms of ethical implications, this study underscores the role of individual behavior – particularly masculinity – in shaping executive decision-making. Such behavior may predispose CEOs to aggressive strategies and a higher tolerance for fraudulent activities, highlighting the ethical importance of considering personal behavior in corporate governance.

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