

### How managerial behavior biases mediate audit committee effectiveness and earnings quality



 Esmaeil Mazaheri<sup>1+</sup>

<sup>1,2</sup>Department of Accounting, Shahid Chamran University of Ahvaz, Ahvaz, Iran.

 Mohammad

Ramezan Ahmadi<sup>2</sup>

Ebrahim Anvari<sup>3</sup>

Mohanad Dhyaa Salim<sup>4</sup>



(+ Corresponding author)

<sup>1</sup>Email: [e.mazaheri@scu.ac.ir](mailto:e.mazaheri@scu.ac.ir)

<sup>2</sup>Email: [Ahmadi\\_m@scu.ac.ir](mailto:Ahmadi_m@scu.ac.ir)

<sup>3</sup>Department of Economics, Shahid Chamran University of Ahvaz, Ahvaz, Iran.

<sup>3</sup>Email: [e.anvari@scu.ac.ir](mailto:e.anvari@scu.ac.ir)

<sup>4</sup>Shahid Chamran University of Ahvaz, Ahvaz, Iran.

<sup>4</sup>Email: [mohanaddhyaaaslim@scu.ac.ir](mailto:mohanaddhyaaaslim@scu.ac.ir)

### ABSTRACT

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This study investigates the mediating role of managerial behavioral biases including overconfidence, optimism, and narcissism in the relationship between audit committee composite and earnings quality among manufacturing firms listed on the Iraq Stock Exchange from 2016 to 2023. The methodology is based on exploratory factor analysis (EFA) to construct latent variables, combined with panel regression techniques. Findings reveal that although the composite index of audit committee attributes (size, independence, and financial expertise) does not directly and significantly affect earnings quality ( $\beta = 0.016$ ,  $p = 0.203$ ), it exerts a significant positive indirect influence on financial reporting quality by reducing managerial behavioral biases. This mediating effect was statistically confirmed through the Sobel test ( $z = 5.65$ ,  $p < 0.001$ ) and bootstrap analysis (95% CI: [0.0085, 0.0343]). In other words, effective audit committees primarily enhance earnings quality by moderating managers' cognitive and emotional biases not merely through direct oversight. These results carry concrete policy implications: regulators in Iraq and similar emerging markets should not only strengthen audit committee mandates but also integrate behavioral risk assessments into corporate governance codes. Specifically, requiring audit committees to evaluate and challenge managerial bias through training, disclosure requirements, or behavioral oversight mechanisms can significantly improve financial reporting integrity where institutional enforcement is weak.

**Contribution/ Originality:** This study introduces a novel mediation framework by demonstrating that a composite of managerial behavioral biases overconfidence, optimism, and narcissism fully mediates the effect of audit committee characteristics on earnings quality in an emerging market. It offers new insights into the behavioral pathways through which governance structures influence financial reporting.

## 1. INTRODUCTION

In recent years, corporate governance has emerged as a central pillar in ensuring the quality of financial reporting and protecting stakeholders' interests. Among the various mechanisms designed to enhance transparency and accountability in companies, the audit committee plays a key role. Empirical studies indicate that the relationship between audit committee characteristics such as size, independence, and financial expertise and earnings quality is complex and sometimes inconsistent. For example, Klein (2002) found a significant relationship between full audit

committee independence and reduced earnings management, but this association was not consistently confirmed for other characteristics. Baxter and Cotter (2009) demonstrated that the accounting expertise of members could reduce cash flow estimation errors but is not necessarily linked to reduced earnings management; in some cases, it was even associated with an increase. Additionally, Nelson and Devi (2013) emphasized that the impact of financial expertise depends on how it is defined, noting that mere membership in professional associations is insufficient instead, a combination of managerial experience and advanced education is also crucial. Overall, these structural characteristics can under specific conditions help reduce information asymmetry and limit opportunities for earnings manipulation, but this effect is not always direct, positive, or uniform.

Behavioral accounting research underscores how managerial biases critically shape financial reporting. Overconfident managers, prone to overestimating outcomes, often make aggressive accounting choices that distort earnings quality (Salehi, Lari DashtBayaz, Hassanpour, & Tarighi, 2020; Schrand & Zechman, 2012). Similarly, managerial optimism is linked to upward-biased earnings forecasts and income smoothing, as executives seek to project stability (Li, Markov, & Shu, 2023; Shu, Chiang, & Lin, 2012). Most critically, narcissistic CEOs deliberately manipulate earnings, not only inflating them for self-enhancement but also strategically reducing them to build hidden reserves, enabling future earnings boosts that polish their long-term image (Buchholz, Lopatta, & Maas, 2020). In emerging markets like Iraq, these biases, particularly narcissism, are strongly associated with lower earnings quality (Al-Abboodi, Dastgir, Almagtome, & Alimoradi, 2024).

Despite extensive research on governance structures and managerial biases, few studies examine how they interact to shape earnings quality, especially in emerging markets like Iraq. Most treat them as separate forces. Crucially, while recent studies confirm that audit committees moderate the impact of overconfidence (Islamudin, 2022) or narcissism (Al-Abboodi et al., 2024; Sardari, Setayesh, Kordlouie, & Banimahd, 2021) on earnings management, none test whether these biases mediate the governance–earnings link. This distinction is vital: moderation means governance alters how bias affects earnings; mediation means governance affects earnings by first reducing bias. In Iraq's weak institutional context, where enforcement is limited (Al-Abboodi et al., 2024), managerial traits like narcissism disproportionately distort reporting. Therefore, this study fills the mediation gap, proposing that audit committees improve earnings quality not directly but by curbing psychological biases that drive manipulation.

Although focused on Iraq, this study offers insights relevant to the literature on Asian corporate governance, where institutional frameworks are evolving and behavioral influences are pronounced (e.g., Azhari, Hasnan, & Sanusi, 2020; Islamudin, 2022). By identifying managerial biases as a key mediator, it advances context-sensitive governance models in Asia that integrate psychological dynamics with formal structures.

The current study addresses a significant gap in understanding the relationship between audit committee strength and earnings quality by proposing, for the first time, that managerial biases such as overconfidence, optimism, and narcissism mediate rather than simply moderate this relationship. While prior research has examined the effects of governance structures and systems, this study introduces a framework that integrates these elements, grounded in behavioral science principles, aligning with the recommendations of Salehi, Ahmed Jabbar, and Orfizadeh (2024). The framework emphasizes how governance influences managerial cognition rather than solely constraining behavior. Practically, the study suggests that regulators in emerging markets should incorporate behavioral risk frameworks into governance reforms; stronger audit committees can enhance financial reporting quality by holding management accountable, provided they address behavioral biases. Methodologically, the research employs exploratory factor analysis to develop latent variables for measuring governance and behavioral biases, offering a more nuanced approach than simple dichotomous indicators of behavioral biases in management teams. The findings yield actionable insights for Iraq and similar emerging markets, indicating that effective oversight of executive decisions related to financial reporting depends not only on institutional design but also on psychological calibration of decision-making processes.

## 2. LITERATURE REVIEW AND RESEARCH HYPOTHESES

In accounting theory, two foundational perspectives help explain how governance and judgment interact: Agency Theory and Prospect Theory. Agency Theory, pioneered by Jensen and Meckling (1976), views the firm as a web of contracts where shareholders ("principals") delegate tasks to managers ("agents"). However, this delegation is not without tension. Managers typically possess more knowledge about the firm's operations and often tolerate risk differently than owners. Consequently, they may consciously or unconsciously pursue personal goals at the expense of shareholder value. The resulting "agency costs" can manifest in wasteful investments, opaque reporting, or even outright resource diversion. To mitigate these issues, oversight bodies such as the audit committee are introduced to realign incentives and narrow the information gap. Nonetheless, even well-designed monitoring may fall short if we assume managers are purely rational. This is where Prospect Theory (Kahneman & Tversky, 1979) offers a crucial corrective. Their work demonstrates that under conditions of uncertainty, individuals do not weigh outcomes objectively. Instead, they evaluate gains and losses relative to a mental reference point losses tend to hurt far more than equivalent gains, a phenomenon known as loss aversion. Managers may thus resort to aggressive accounting not out of greed, but to avoid the psychological pain associated with reporting a loss. In essence, financial distortions can originate as much from cognitive wiring as from opportunism.

### 2.1. Audit Committee and Earnings Quality

According to agency theory, the audit committee acts as a key monitoring mechanism to reduce information asymmetry and improve the quality of financial reporting. In general, the existing literature supports the positive role of audit committee characteristics (such as size, independence, and financial expertise) in enhancing earnings quality (e.g., Baxter & Cotter, 2009; Klein, 2002). However, evidence regarding the extent of the impact of each of these characteristics is not uniform and depends on contextual factors such as the regulatory environment, geographical context, and measurement metrics. For example, Lin, Li, and Yang (2006) in a study on U.S. companies found that, in that specific context, only the size of the audit committee had a significant impact on reducing financial statement restatements, while other characteristics showed no statistically significant effect. Also, during Australia's Global Financial Crisis, only audit committee independence significantly curbed earnings management; Big4 audits and financial expertise showed no significant effect (Mollik, Mir, McIver, & Bepari, 2020). Similarly, Nelson and Devi (2013) demonstrated that, in Malaysian companies, the definition of "expertise" needs to be expanded and is not limited to accounting expertise alone. In the context of developing economies and emerging markets, where corporate governance mechanisms may be weaker and information asymmetry higher, the role of the audit committee becomes even more prominent. Studies such as Bala and Kumai (2015) in Nigeria and Al-Abboodi et al. (2024) in Iraq all testify to the positive and significant impact of various audit committee characteristics (including independence, expertise, and size) on improving earnings quality in such environments.

While prior studies in developing economies generally support a positive link between audit committee attributes and earnings quality, findings remain mixed particularly regarding which specific characteristics matter most and under what institutional conditions. Moreover, most research examines these attributes in isolation, overlooking potential synergies. This study addresses this gap by hypothesizing that a composite index capturing the joint effect of size, independence, and financial expertise better reflects audit committee effectiveness and is more strongly associated with earnings quality.

*Hypothesis 1 (H<sub>1</sub>): There is a positive and significant relationship between the combination of audit committee characteristics (including size, independence, and financial expertise) and earnings quality.*

### 2.2. Managerial Behavioral Biases and Earnings Quality

Based on an extensive literature review, strong empirical evidence exists that a composite of managerial behavioral biases has a significant negative impact on earnings quality. Many researchers have shown that various

behavioral dispositions of managers, such as overconfidence, optimism, and narcissism, tend to bias the manager's professional judgment and ultimately influence the quality of financial reporting through their decisions. Specifically, there is clear evidence from studies conducted by Schrand and Zechman (2012); Zaher (2019) and Salehi et al. (2020), and Salehi et al. (2024) that managers with biases exhibit a greater likelihood of engaging in aggressive accounting estimates and earnings management, both accrual-based and real, to create a favorable and unrealistic perception of the firm. Moreover, there is accumulating evidence, such as Shu et al. (2012) in the context of IPOs, and Li et al. (2023) regarding investment efficiency, indicating that managerial optimism can lead to erroneous earnings expectations and misallocation of resources, resulting in poor earnings quality.

The adverse relationship emerges from various mechanisms. First, managers with overconfidence are more likely to choose riskier projects and provide more optimistic forecasts of future cash flows, leading to an overall distortion of earnings quality (Islamudin, 2022; Li et al., 2023). Second, narcissistic managers are motivated to perpetuate and enhance their grandiose self-image, which often manifests in conspicuous behavior that adversely impacts earnings quality (Buchholz et al., 2020; Sari, Fuadah, & Yusnaini, 2022). Additionally, Shu et al. (2012) specifically highlight that overoptimistic managers tend to overestimate earnings and are reluctant to revise upwardly biased forecasts. Meanwhile, Li et al. (2023) find that motivational optimism causes managers to overweight favorable information and underweight unfavorable information, resulting in optimistic earnings guidance and lower investment efficiency. Although corporate governance mechanisms such as audit committees could theoretically moderate this negative relationship (Al-Abboodi et al., 2024; Azhari et al., 2020), empirical evidence from various contexts suggests that these mechanisms are often not powerful enough to fully neutralize the negative effect of the combined behavioral biases (Guluma, 2021; Islamudin, 2022). This could be due to weaknesses in the independence, expertise, or authority of these oversight bodies. Although managerial biases are widely linked to poor reporting, most studies examine them in isolation or focus only on moderation. This study advances the literature by treating overconfidence, optimism, and narcissism as a unified behavioral construct that directly undermines earnings quality.

*Hypothesis 2 ( $H_2$ ): There is a negative and significant relationship between the composite of managerial behavioral biases and earnings quality.*

### ***2.3. Audit Committee and Managerial Behavioral Biases***

The body of research reviewed produced divergent findings on the relationship between the audit committee and behavioral bias in management. For example, a study conducted in Malaysia reported that neither audit committee independence nor audit committee expertise was statistically related to accounting errors in statements (Azhari et al., 2020). This finding was parallel to that of Wijaya and Kweniati (2025), which reported that an audit committee in Indonesia could not effectively change management decision-making in the context of tax avoidance. The current study supports the argument that, based on institutional theory, an audit committee is simply a legitimate and symbolic act of complying with obligations rather than an effective monitoring mechanism. In Iran, Sardari et al. (2021) specifically evaluated the moderating effect of audit committee independence on the relationship between CEO narcissism and real earnings management and found that audit committee independence was not able to moderate this relationship. This suggests that the audit committee's independence in a structural sense failed to mitigate the negative effects of psychological biases of management in their financial reporting, due to some form of an institutional barrier or simply not due to operational effectiveness. In another study from Indonesia, (Islamudin, 2022) found that, while in principle, audit committee effectiveness could moderate the positive relationship between managerial overconfidence and earnings management, it was not found to be statistically significant. These findings speak to the functional weakness of audit committees in some institutional contexts and that the mere formal existence of the committees is inadequate. In contrast, a study from Nigeria, Taleatu, Adetula, and Iyoha (2020), reported that corporate governance quality (including audit committees) did moderate the relationship between CFO narcissism and earnings management, showing that strong audit committees do deter some tendencies for earnings management.

Overall, although theory suggests that strong audit committees should reduce managerial behavioral biases, empirical evidence remains mixed and inconclusive particularly in emerging markets where institutional constraints may limit oversight effectiveness. This context-dependent uncertainty motivates our third hypothesis.

*Hypothesis 3 (H<sub>3</sub>): There is a negative and significant relationship between the audit committee composite and managerial behavioral biases.*

#### **2.4. Mediating Effect of Managerial Behavioral Biases**

While prior research has largely treated governance structures and managerial behavior as distinct domains, emerging scholarship recognizes the need to examine their interconnectedness through mediating mechanisms. This study advances beyond the traditional moderation approach by investigating how managerial behavioral biases transmit the influence of audit committee characteristics to earnings quality outcomes. The current literature offers limited insights into these mediating pathways. Islamudin (2022), Sardari et al. (2021), and Taleatu et al. (2020) have examined moderation effects, focusing on how audit committees alter the impact of overconfidence and narcissism on earnings management. However, their work leaves unanswered the critical question of whether governance structures shape financial reporting outcomes primarily by influencing executives' psychological dispositions and decision-making patterns.

We propose that effective audit committees reduce overconfidence by challenging unrealistic assessments, temper optimism through balanced performance evaluations, and constrain narcissistic tendencies via enhanced accountability. These behavioral adjustments then lead to improved earnings quality through more conservative accounting choices and reduced manipulation attempts.

This mediation framework draws theoretical support from behavioral agency theory, which integrates insights from behavioral economics (Kahneman & Tversky, 1979) and organizational design (Jensen & Meckling, 1976). It suggests governance mechanisms operate not just as external constraints but as systems that shape managerial cognition and motivation. The model is particularly relevant for emerging markets where formal institutions are weaker and behavioral factors may play amplified roles.

Despite growing interest in governance-behavior interactions, prior studies have largely tested moderation not mediation leaving unclear whether audit committees affect earnings quality by first shaping managerial cognition. This study addresses that gap by proposing a full mediation model grounded in behavioral agency theory.

*Hypothesis 4 (H<sub>4</sub>): Managerial behavioral biases mediate the relationship between the audit committee composite and earnings quality.*

### **3. METHODS**

#### **3.1. Research Design**

This research employs a descriptive-correlational method and is quantitative-experimental in nature. With an applied objective, it investigates the relationships between latent variables of governance and managerial behavior in predicting earnings quality in the Iraqi market.

#### **3.2. Population and Sample**

The statistical population of this study consists of all manufacturing firms listed on the Iraq Stock Exchange (ISX) during the period from 2016 to 2023. The ISX currently includes a total of 129 companies, but several filtering criteria were applied to ensure data quality, relevance, and consistency. A systematic sampling method was employed to select the final sample. The following exclusion criteria were used.

- 1) Firms that were not actively traded on the ISX between 2017 and 2023 (15 firms, 120 firm-years).
- 2) Financial institutions, banks, insurance companies, leasing firms, investment companies, and holding companies, due to differences in financial structure and regulatory requirements (71 firms, 568 firm-years).

3) Firms whose shares were suspended during the research period (6 firms, 36 firm-years).

4) Firms with missing or inaccessible financial data (4 firms, 32 firm-years).

After applying these filters, the final sample comprises 33 firms, representing a total of 264 firm-year observations. This sample size ensures sufficient statistical power while maintaining data reliability and consistency across time and firms. Table 1 presents the sectorial composition of the final sample of manufacturing firms used in this study.

**Table 1. Sectoral composition of the final sample (Manufacturing firms).**

Sector	Number of firms	% of sample
Industry	22	67%
Telecommunications	5	15%
Agriculture	6	18%
Total	33	100%

**Note:** Agriculture includes agro-processing and related production firms. Telecom includes mobile and communication providers. Industry covers manufacturing, construction materials, pharmaceuticals, textiles, and packaging. Financial firms were excluded.

### 3.3. Variables and Measurement

#### 3.3.1. Dependent Variable: Earnings Quality

Earnings quality represents the faithfulness with which reported earnings reflect a firm's true economic performance and future cash flow potential. Following established methodologies, we measure earnings quality through discretionary accruals estimated using a cross-sectional modified Jones model (Dechow & Dichev, 2002; Dechow, Sloan, & Sweeney, 1995).

$$DA_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - \left[ \alpha_1 \cdot \frac{TA_{i,t}}{A_{i,t-1}} + \alpha_2 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \alpha_3 \cdot \frac{PPE_{it}}{A_{i,t-1}} \right] \quad (1)$$

Where:

DA: Discretionary accruals.

TA: Total accruals.

A: Beginning-of-period total assets.

$\Delta REV$ : Change in revenue.

PPE: Property, plant, and equipment.

The model controls for normal accruals related to revenue growth and capital intensity. Lower absolute values of DA indicate more persistent, less manipulated earnings, reflecting higher earnings quality. This approach effectively captures accrual-based earnings management while controlling for firm-specific operating characteristics.

#### 3.3.2. Independent Variable: Audit Committee Characteristics

The effectiveness of audit committees is operationalized through three fundamental dimensions, consistent with established governance literature (Abbott, Parker, & Peters, 2004; Zadeh, Askarany, Shirzad, & Faghani, 2023).

Committee Size (ACSIZE): measured by the total number of directors serving on the audit committee, with larger sizes presumed to enhance oversight capacity (Bala & Kumai, 2015).

Financial Expertise (ACEDU): Calculated as the percentage of members possessing professional qualifications in accounting or finance (e.g., CPA, CFA), reflecting technical competence (Klein, 2002).

Independence (ACIND): represented by the proportion of non-executive, independent directors, ensuring objective monitoring (Lin et al., 2006).

These dimensions are synthesized into a Composite Factor of Audit Committee (CFAC) using Exploratory Factor Analysis (EFA) with principal component estimation, following the methodological guidelines described in (Tabachnick & Fidell, 2019).

### 3.3.3. Mediating Variable: Managerial Behavioral Biases (MB)

Overconfidence (MOC): A cognitive bias where executives overestimate their firm's future performance. This bias is measured using the ratio of capital expenditures (CE) to total assets at the beginning of the year, following Schrand and Zechman (2012).

$$MCON_{i,t} = \frac{CE_{i,t}}{TA_{i,(t-1)}} \quad (2)$$

Optimism (MOPT): Managerial optimism is defined as the tendency of managers to hold overly positive expectations about future firm performance. In this study, managerial optimism is operationalized based on the bias in management's earnings forecasts, following the behavioral measurement approach proposed by Chi, Ziebart, and Campbell (2019).

$$MOPT_{i,t} = -\frac{(AEPS_{i,t} - FEPS_{i,t})}{P_{i,t-1}} \quad (3)$$

Where  $AEPS_{i,t}$  and  $FEPS_{i,t}$  are the actual primary and the management's forecast of annual primary earnings per share, respectively and  $P_{i,t-1}$  is the stock price of firm  $i$  at the end of year  $t-1$  (or the beginning of year  $t$ ). A negative bias signifies that the forecasted EPS was higher than the actual EPS, which is consistent with managerial optimism.

Narcissism (MNAR): Measured as the ratio of the number of words in the CEO's letter to shareholders to the total word count of the annual report, following the approach adapted from Chatterjee and Hambrick (2007).

These variables (MOC, MOPT, and MNAR) are then combined into a single composite behavioral bias score (CMB) using factor analysis, serving as a proxy for aggregate managerial behavioral risk and enabling a holistic assessment of managerial decision-making propensity.

### 3.3.4. Control Variables

To ensure the accuracy of results and to minimize the influence of independent variables, four control variables were employed: firm size (SIZE), firm age (AGE), return on assets (ROA), and market-to-book ratio (MBV). These variables account for structural and performance factors that could potentially affect earnings quality and managerial decision-making. The selection of these controls aligns with standard practices in corporate governance and behavioral finance literature (e.g., Islamudin, 2022; Sardari et al., 2021; Wijaya & Kweniati, 2025).

Firm Size (SIZE): Natural logarithm of total assets.

Age (AGE): The number of years since listing.

Return on Assets (ROA): Net income divided by total assets.

Market-to-Book Ratio (MBV): a proxy for growth opportunities.

### 3.4. Statistical Techniques

Descriptive statistics were computed to summarize central tendency, dispersion, and distributional properties of the main variables across all firm-year observations. Pearson correlation coefficients were calculated to assess linear associations among variables and detect potential multicollinearity issues prior to regression analysis. Exploratory Factor Analysis (EFA) was conducted to extract underlying factors among both audit committee characteristics and managerial behavioral biases, facilitating the construction of reliable composite indices: CFAC for audit committee effectiveness and CMB for managerial behavioral traits. To test the direct relationships between variables, Generalized Least Squares (GLS) panel regression models were employed, which allow for the estimation of both within-entity and between-entity effects while accounting for heteroskedasticity and autocorrelation. The primary regression models are specified as follows.

$$EQ_{i,t} = \beta_0 + \beta_1 CMB_{i,t} + \beta_2 CFAC_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 ROA_{i,t} + \beta_5 AGE_{i,t} + \beta_6 MBV_{i,t} + \varepsilon_{i,t} \quad \text{Model (3-1)}$$

and

$$CMB_{i,t} = \alpha_0 + \alpha_1 CFAC_{i,t} + \alpha_2 SIZE_{i,t} + \alpha_3 ROA_{i,t} + \alpha_4 AGE_{i,t} + \alpha_5 MBV_{i,t} + \epsilon_{i,t} \quad \text{Model (3-2)}$$

Where:

EQ: Earnings quality.

CFAC: Composite factor of audit committee characteristics.

CMB: Composite measure of managerial behavioral biases.

$\epsilon$  &  $\epsilon$ : Error terms of Models (3-1) and (3-2), respectively.

Model (3-1) tests the direct relationship between audit committee characteristics and earnings quality, while model (3-2) tests the mediated relationship through managerial behavioral biases. The GLS method was used because of its ability to process unbalanced panels and yield efficient estimates under various error distributions. Model specification tests such as the F-Limer, Breusch-Pagan Lagrange Multiplier test, and Hausman test were used to find the best estimator for each model (Baltagi, 2021).

In addition, the indirect or mediating effect of managerial behavioral biases (CMB) in the relationship between audit committee characteristics (CFAC) and earnings quality (EQ) was examined through the Sobel test (Sobel, 1982). The Sobel test examines whether the effect of the independent variable (CFAC) on the dependent variable (EQ) is significantly mediated through the mediator (CMB). In addition to enhancing the stability of mediation analysis, bias-corrected bootstrapping with 5000 resamples was employed to further estimate indirect effects and provide more accurate confidence intervals (Hayes, 2018). Application of the dual-method strategy ensures results are not vulnerable to strong normality assumptions and provides more empirical evidence for the hypothesized mediation mechanism.

#### 4. RESULTS

This section reports the study's key empirical results. The analysis begins with exploratory factor analysis to construct composite indices for composite factor audit (CFAC) and managerial behavioral biases (CMB).

**Table 2.** Factor analysis results (KMO, Bartlett's test, eigenvalues, and explained variance).

Construct	KMO	Bartlett's $\chi^2$	df	p-value	Eigenvalue	% of Variance
CFAC	0.656	104.489	3	0.000	1.768	58.9
CMB	0.637	84.819	3	0.000	1.688	56.3

Table 2 presents the exploratory factor analysis results evaluated according to Tabachnick and Fidell (2019) standards. The KMO measures for both constructs (CFAC=0.656; CMB=0.637) exceed the minimum acceptable threshold of 0.60, indicating adequate sampling for factor analysis. Bartlett's Test of Sphericity shows significant results (CFAC:  $\chi^2=104.489$ ,  $p<0.001$ ; CMB:  $\chi^2=84.819$ ,  $p<0.001$ ), rejecting the null hypothesis of an identity correlation matrix. According to Kaiser's criterion, the number of factors extracted by factor analysis equals the number of eigenvalues greater than 1. For both constructs, only one principal component was extracted, with CFAC demonstrating an eigenvalue of 1.768 (explaining 58.9% of the variance) and CMB showing an eigenvalue of 1.688 (explaining 56.3% of the variance).

**Table 3.** Component matrix (Factor loadings).

Variable	Component1 (CFAC)	Component 1 (CMB)
ACSIZE	0.764	---
ACEDU	0.758	---
ACIND	0.780	---
MOPT	---	0.777
MCON	---	0.761
MNAR	---	0.714

Table 3 demonstrates the factor loadings derived from principal component analysis (PCA), presenting the measurement validity of the latent constructs. The analysis reveals a well-defined psychological construct comprising managerial optimism (MOPT = 0.777), overconfidence (MCON = 0.761), and narcissism (MNAR = 0.714), with all loadings exceeding the 0.70 threshold for item retention (Hair, Babin, Anderson, & Black, 2019). Optimism demonstrates the strongest association with the latent factor, indicating its central role in driving biased decision-making. The narrow range of loadings (0.714–0.777) suggests these behavioral biases contribute relatively equally to the overall construct, though with slightly diminishing influence from optimism to narcissism. The composite index construction appropriately weights each behavioral measure by its factor loading, creating a psychometrically sound measure of executive bias for mediation testing. The final index is constructed as.

$$CMB_{i,t} = 0.774 \cdot MOPT_{i,t} + 0.761 \cdot MCON_{i,t} + 0.714 \cdot MNAR_{i,t} \quad (4)$$

The component matrix confirms a robust one-dimensional structure for audit committee characteristics, with all indicators (ACSIZE, ACEDU, ACIND) loading strongly ( $>0.75$ ) on a single factor, demonstrating excellent convergent validity. Audit committee independence (ACIND) emerges as the most influential dimension (loading = 0.780), followed closely by committee size (ACSIZE = 0.764) and financial expertise (ACEDU = 0.758). These results validate the use of a weighted composite index (CFAC) to capture overall committee effectiveness, where each component contributes proportionally to its factor loading. The high loadings suggest these structural features collectively represent a coherent latent construct of governance quality, supporting their combined use in subsequent analyses, which will be used in subsequent regression analyses.

$$CFAC_{i,t} = 0.764 \cdot ACSIZE_{i,t} + 0.758 \cdot ACEDU_{i,t} + 0.780 \cdot ACIND_{i,t} \quad (5)$$

Table 4 summarizes the descriptive statistics and distributional characteristics of the study's main variables, confirming appropriate conditions for parametric analysis. The earnings quality measure (EQ) exhibits a near-normal distribution (mean = 0.547, SD = 0.200) with excellent symmetry (skewness = 0.043) and light tails (kurtosis = -0.343). Meanwhile, both the governance (CFAC: mean = 4.749, SD = 0.893) and behavioral (CMB: mean = 1.004, SD = 0.245) constructs show well-behaved distributions within theoretical thresholds ( $|\text{skewness}| < 1$ ;  $|\text{kurtosis}| < 3$ ), as recommended by Kline (2015). Control variables demonstrate expected patterns: firm size (SIZE: range = 10.20–14.71 log units), profitability (ROA: mean = 2.15%, SD = 0.32%), and firm age (8–14 years) all fall within plausible ranges without extreme outliers. Notably, the negative kurtosis of SIZE (-0.417) suggests a slightly flatter distribution than normal, whereas ROA's positive kurtosis (0.517) indicates mild peakedness; both nevertheless remain within acceptable limits for regression analyses.

**Table 4. Descriptive statistics of main research variables.**

Variable	Mean	Std. Deviation	Skewness	Kurtosis	Min	Max
EQ	0.5471	0.2001	0.043	-0.343	0.02	1.00
CFAC	4.7486	0.8933	-0.271	0.228	1.89	6.86
CMB	1.0040	0.2445	0.110	-0.083	0.28	1.72
SIZE	12.4025	0.9500	0.162	-0.417	10.20	14.71
AGE	10.9994	1.0045	-0.060	0.136	8.00	14.00
ROA	2.1500	0.3200	-0.210	0.517	0.95	2.88

The correlation matrix in Table 5 reveals several theoretically significant relationships. Earnings quality (EQ) shows a positive correlation with the factor of audit committee (CFAC:  $r=0.243$ ,  $p<0.01$ ) and a negative correlation with the composite of managerial biases (CMB:  $r=-0.254$ ,  $p<0.01$ ). A notable negative correlation exists between CFAC and CMB ( $r=-0.256$ ,  $p<0.01$ ), suggesting governance mechanisms may help mitigate biases. Control variables align with expectations: firm size (SIZE) correlates positively with both CFAC and firm age, while profitability (ROA) shows significant correlations with all main constructs. The strongest relationship is between CFAC and ROA ( $r=0.282$ ,  $p<0.01$ ). All correlation coefficients remain below 0.30, indicating no multicollinearity concerns. These significant yet modest correlations are consistent with established findings in behavioral accounting research.

**Table 5.** Correlation matrix of research main variables.

Variables	EQ	CFAC	CMB	SIZE	MBV	AGE	ROA
EQ	1.000						
CFAC	0.243**	1.000					
CMB	-0.254**	-0.256**	1.000				
SIZE	0.099	0.234**	-0.018	1.000			
MBV	0.165**	0.248**	0.047	0.170**	1.000		
AGE	0.181**	0.152*	-0.008	0.211**	0.099	1.000	
ROA	0.170**	0.282**	0.160**	0.180**	0.250**	0.119	1.000

Note: \*\*p<0.01, \*p<0.05.

Table 6 reports the model specification tests guiding our estimator selection. For Model 3-1 (direct effects on earnings quality), the highly significant F-Limer or Chow test ( $F=4.42$ ,  $p<0.001$ ) indicates substantial unobserved heterogeneity, while the non-significant Hausman test ( $\chi^2=2.06$ ,  $p=0.914$ ) fails to reject the random effects (RE) assumptions, justifying the RE estimator's efficiency. Conversely, Model 3-2 (mediation path) shows no evidence of heterogeneity (F-Limer:  $F=1.32$ ,  $p=0.129$ ; Breusch-Pagan:  $\chi^2=1.10$ ,  $p=0.147$ ), supporting the use of the pooled model (PM) with OLS estimation for parsimony (Wooldridge, 2015). This dual approach - RE for direct effects and PM for mediation - aligns with panel data best practices (Hsiao, 2014), where simpler models are preferred when heterogeneity is statistically insignificant, the results collectively demonstrate our rigorous treatment of endogeneity threats while avoiding unnecessary model complexity.

**Table 6.** Results of panel model tests for models (3-1) and (3-2).

Test	Model (3-1)	Model (3-2)
F-Limer	$F(32, 225) = 4.42$ ( $p = 0.000$ )	$F(32, 226) = 1.32$ ( $p = 0.129$ )
Hausman	$\chi^2(6) = 2.06$ ( $p = 0.914$ )	—
Breusch-Pagan	—	$\chi^2(1) = 1.10$ ( $p = 0.147$ )
Decision	Random Effects Model	Pooled Model

The estimation results in Table 7 for the two regression models confirm the validity and robustness of the findings. In Model (3-1), which examines the direct relationship between audit committee characteristics (CFAC) and earnings quality (EQ), a Random Effects (RE) estimator was selected based on the insignificance of the Hausman test ( $p = 0.914$ ). The model exhibits an adjusted  $R^2$  of 0.132 and a statistically significant Wald  $\chi^2$  statistic ( $\chi^2(6) = 63.00$ ,  $p < 0.001$ ), indicating acceptable explanatory power. Diagnostic tests reveal no serious issues regarding normality (Shapiro-Wilk  $p = 0.834$ ) or autocorrelation (Wooldridge Test:  $p = 0.690$ ).

In contrast, Model (3-2), which investigates the relationship between audit committee characteristics (CFAC) and managerial behavioral biases (CMB), does not exhibit significant heterogeneity across firms, as confirmed by the Breusch-Pagan Lagrange Multiplier test ( $p = 0.147$ ). Therefore, a Pooled OLS (PM) model was employed, yielding an adjusted  $R^2$  of 0.113 and a statistically significant F-statistic ( $F(5,258) = 7.66$ ,  $p < 0.001$ ). Normality is supported by Shapiro-Wilk test results ( $p = 0.406$ ), and there is no evidence of multicollinearity, as indicated by low VIF values (all below 1.31).

Table 7 presents the empirical results of the regression models used to test the study's hypotheses. The table is divided into two main models; Model (3-1) examines the direct relationship between audit committee characteristics (CFAC) and earnings quality (EQ), using a Random Effects (RE) estimator, and Model (3-2) investigates the relationship between audit committee characteristics (CFAC) and managerial behavioral biases (CMB), employing a Pooled OLS (PM) model. Key diagnostics, such as variance inflation factors (VIFs), Wald  $\chi^2$ /F-statistics, and adjusted  $R^2$  values, confirm the robustness and validity of the models. The table also reports coefficients, standard errors, and significance levels for each variable, providing a foundation for hypothesis testing. The model shows excellent normality properties (Shapiro-Wilk  $W=0.997$ ,  $p=0.834$ ) with no autocorrelation concerns (Wooldridge  $F=0.162$ ,

$p=0.690$ ). Variance inflation factors (VIFs) range between 1.064 and 1.306, well below the conservative threshold of 5, indicating no multicollinearity issues (Hair et al., 2019). The Wald  $\chi^2$  statistic ( $\chi^2=63.00$ ,  $p<0.001$ ) confirms joint significance, while the adjusted  $R^2$  (0.152) is within the range commonly observed in behavioral accounting studies examining similar latent constructs.

Model 3-2 (PM) similarly meets all parametric requirements: the residual diagnostics show acceptable normality (Shapiro-Wilk  $W=0.994$ ,  $p=0.406$ ). The absence of autocorrelation (Wooldridge  $F=2.978$ ,  $p=0.094$ ) and low VIFs (1.064–1.171) further validate the specification. While the F-statistic ( $F=7.657$ ,  $p<0.001$ ) indicates model significance, the modest  $R^2$  (0.129) reflects the inherent complexity of measuring psychological constructs – consistent with prior mediation studies (Hayes, 2018).

**Table 7.** Model estimation results and diagnostic tests.

Variable	Model (3-1)	VIF	Model (3-2)	VIF
CFAC	0.016 (0.013)	1.306	-0.094*** (0.017)	1.171
CMB	-0.248*** (0.045)	1.148	-	-
SIZE	0.005 (0.011)	1.117	0.002 (0.016)	1.117
MBV	1.434 (0.680)	1.125	1.110 (0.954)	1.119
AGE	0.024 (0.021)	1.064	0.002 (0.015)	1.064
ROA	0.100** (0.036)	1.208	0.181*** (0.047)	1.144
Constant	-0.416 (0.354)	-	0.5625 (0.4094)	-
$R^2$	0.152		0.129	
Wald $\chi^2$ /F-statistic	$\chi^2(6)=63.00***$		$F(5,258)=7.657***$	
Wooldridge	$F(1, 32)=0.162$ , $p=0.690$		$F(1, 32)=2.978$ , $p=0.094$	
Shapiro-Wilk	$W=0.997$ , $p=0.834$		$W=0.994$ , $p=0.406$	

**Note:** Standard errors in parentheses. \*\*\* $p<0.001$ , \*\* $p<0.01$ . Model 3-1 uses Random Effects (RE) estimation with Wald  $\chi^2$  test; Model 3-2 employs Pooled OLS with F-test.

According to Table 7, Hypothesis H1 posited a positive relationship between the composite factor of audit committee characteristics (size, independence, financial expertise) and earnings quality. However, the coefficient for CFAC in Model (3-1) is statistically insignificant ( $\hat{\beta} = 0.016$ ,  $p = 0.203$ ), failing to support H1, suggesting that, in the Iraqi context, structural features of audit committees alone do not directly enhance earnings quality. Instead, the study reveals that audit committees influence earnings quality indirectly through mitigating managerial biases as evidenced by the significant mediation effect (H4). The coefficient of CMB in Model (3-1) is negative and statistically significant ( $\hat{\beta} = -0.248$ ,  $p<0.001$ ), supporting the hypothesis that higher levels of managerial behavioral bias, particularly overconfidence, optimism, and narcissism are associated with lower earnings quality.

Model (3-2) reveals a significant negative association between audit committee characteristics (CFAC) and managerial behavioral biases (CMB) ( $\hat{\beta} = -0.094$ ,  $p < 0.001$ ). This indicates that firms with stronger governance structures tend to have managers who exhibit fewer behavioral biases, consistent with the notion that effective oversight mechanisms constrain managerial discretion. Thus, Hypothesis 3 is empirically confirmed.

**Table 8.** Sobel and bootstrap mediation test.

Effect type	Coefficient	Standard error	$f^2$	z-value	p-value	95% CI
Indirect effect	0.0198	0.0065	0.066	5.650	0.000	[0.0085, 0.0343]

The mediation analysis presented in Table 8 reveals a statistically significant indirect effect ( $\hat{\beta} = 0.0198$ ,  $p < 0.001$ ), indicating that audit committee effectiveness (CFAC) enhances earnings quality (EQ) primarily by mitigating managerial behavioral biases (CMB). The robustness of this mediation is further supported by both the Sobel test (Sobel, 1982) ( $z = 5.650$ ,  $p < 0.001$ ) and bias-corrected bootstrapping confidence intervals (95% CI [0.0085, 0.0343]). Additionally, the effect size, measured using Cohen's  $f^2$  ( $f^2 = 0.066$ ), indicates a small-to-medium effect (Cohen, 1988), reinforcing the significance of psychological mechanisms in shaping earnings quality. The results confirm that

stronger audit committees are associated with lower levels of managerial behavioral bias, which in turn leads to higher earnings quality.

## 5. DISCUSSION

This study demonstrates that audit committees enhance earnings quality in Iraqi firms primarily through an indirect behavioral pathway rather than direct oversight. The findings reveal a significant mediation mechanism: well-structured audit committees mitigate managers' overconfidence, optimism, and narcissism, thereby reducing cognitive distortions that typically impair financial reporting. The observed insignificance of the direct relationship between audit committee characteristics (CFAC) and earnings quality (EQ) ( $\hat{\beta} = 0.016$ ,  $p = 0.203$ ) aligns with some prior studies that have failed to find robust evidence of a direct association (e.g., Azhari et al., 2020; Islamudin, 2022). This may be attributed to weak institutional frameworks in Iraq, where formal monitoring systems are often constrained by limited regulatory enforcement and cultural norms that prioritize executive autonomy over board-level oversight. In contrast, the negative and significant effect of managerial behavioral biases on earnings quality ( $\hat{\beta} = -0.211$ ,  $p < 0.001$ ) corroborates previous behavioral accounting studies that highlight the adverse impact of cognitive distortions on financial reporting (Salehi et al., 2024; Schrand & Zechman, 2012). Overconfident managers tend to overestimate their predictive abilities, leading to aggressive accounting choices and increased discretion in accrual estimation. Similarly, optimistic executives are more prone to issuing overly favorable forecasts, which may result in income smoothing or selective disclosures. Narcissistic leaders, who seek personal recognition and exhibit inflated self-perception, also demonstrate tendencies toward earnings manipulation, particularly in environments with weaker internal controls.

The empirical results support the hypothesis that audit committees significantly reduce managerial behavioral biases ( $\hat{\beta} = -0.094$ ,  $p < 0.001$ ), consistent with recent empirical work (Sardari et al., 2021; Taleatu et al., 2020). In particular, independent and financially literate audit committees appear to constrain managerial overconfidence, optimism, and narcissism by enhancing scrutiny and increasing accountability. This finding contributes to the growing body of literature suggesting that governance mechanisms not only regulate behavior through formal constraints but also indirectly shape the decision-making psychology of managerial (Mollik et al., 2020; Wijaya & Kweniati, 2025). The mediation analysis confirms that of audit committee characteristics on earnings quality is transmitted via managerial behavioral biases. This indirect effect is statistically significant ( $\hat{\beta} = 0.0198$ , bootstrapped 95% CI [0.0085, 0.0343],  $p < 0.001$ ), reinforcing the view that managerial biases play a pivotal role in translating governance strength into improved financial reporting. These results echo the theoretical arguments of behavioral economics, which posit that individual decision-makers operate under bounded rationality and are influenced by both organizational incentives and personal dispositions (Kahneman & Tversky, 1979).

### 5.1. Behavioral Biases as Mediators: Theoretical Implications

The current findings contribute to the integration of behavioral dimensions into traditional models of corporate governance, offering empirical support for a hybrid framework that considers both structural controls and managerial traits. While most prior research has treated these domains separately, this is especially relevant in emerging markets like Iraq, where institutional weaknesses may amplify the influence of personality-driven decision-making. From the agency-theoretic perspective (Jensen & Meckling, 1976), these results suggest that audit committees serve not only as monitors of financial processes but also as regulators of managerial behavior, thereby reducing information asymmetry and mitigating opportunistic actions. The significant mediation effect underscores that managerial behavioral biases are not merely epiphenomena but integral components of the principal-agent relationship. This expands the scope of agency theory beyond contractual and incentive alignment toward a broader conceptualization that includes psychological and emotional influences.

### 5.2. Practical and Policy Implications

The findings carry real-world relevance, especially for fragile institutional settings like Iraq. First, regulators shouldn't view audit committees merely as box-ticking exercises; instead, they should empower them to actively challenge the psychological drivers behind earnings manipulation such as overconfidence or narcissism. Second, boards would be wise to look beyond résumés when appointing CEOs and CFOs and consider how personality traits might shape financial reporting. After all, a technically skilled executive with an inflated ego can still undermine transparency. Finally, in contexts where external enforcement is weak, firms could integrate behavioral risk assessments into their governance routines. Simple steps like training directors to recognize cognitive biases or encouraging reflective decision-making might go a long way in strengthening financial integrity, even without sweeping regulatory changes.

### 5.3. Relevance to Emerging Markets

These findings are particularly relevant for developing economies like Iraq, where corporate governance frameworks are still evolving. Unlike developed markets such as the U.S. and Australia, which benefit from robust regulatory enforcement (Mollik et al., 2020), emerging markets often depend more heavily on internal governance structures and managerial attributes to ensure financial reporting quality. As demonstrated by Zaher (2019) and Al-Abboodi et al. (2024), CEO characteristics such as narcissism and overconfidence significantly influence earnings management practices in such environments. This study confirms that even modest enhancements to governance mechanisms can help mitigate managerial biases and improve earnings quality. Therefore, effective governance reforms in transitional economies should integrate both structural and behavioral dimensions to achieve meaningful progress.

### 5.4. Methodological Contributions

Methodologically, this paper makes two key contributions. First, it employs exploratory factor analysis (EFA) to summarize multidimensional constructs into latent variables, thereby improving measurement accuracy and interpretability. The composite indices for composite audit committee (CFAC) and managerial behavioral biases (CMB) show acceptable levels of explained variance (58.9% and 56.3%, respectively), supporting their use in future research. Second, the application of panel regression models pooled model for the mediation path and random effects for the final outcome ensures robust statistical inference across time and entities. Additionally, the use of Sobel test and bootstrap methods enhances confidence in the mediation results, particularly in light of potential endogeneity issues.

### 5.5. Limitations and Future Research Directions

While this study offers valuable insights, several limitations must be acknowledged. First, the sample is limited to manufacturing firms listed on the Iraq Stock Exchange over a specific time frame (2016–2023), which constrains the generalizability to other sectors or regions. Future research could extend the analysis to financial institutions and cross-country comparisons to assess whether these findings hold in more developed markets. Second, the measurement of managerial behavioral biases relies on proxies derived from financial reports and content analysis of management statements. Although these indicators are widely used in the literature (e.g., Salehi et al., 2024; Sari, Fuadah, & Yusnaini, 2022), more direct measures such as psychometric tests or executive interviews could enhance validity. Third, the study focuses primarily on the audit committee's influence on managerial behavior, while other governance mechanisms (e.g., board composition, ownership concentration) are comparatively unexplored. Future studies can attempt to ascertain whether other structural attributes impact executive psychology or whether CEO narcissism interacts with other governance structures differently. Finally, the use of panel data allows examination

of change over time but overlooks dynamic change in individual personalities or governance orientations. Longitudinal or experimental designs would provide more insight into causality.

## 6. CONCLUSION

In summary, this research enhances the understanding of determinants of earnings quality through the introduction of a unique mediation model where the behavioral biases of managers act as the intermediary in the audit committee characteristics and financial reporting relations. This work emphasizes the need to address the underlying psychology in aspects of corporate governance research design and policy development, especially in weaker institutional contexts. The research also provides evidence that when audit committees are more robust, managers will experience less cognitive and emotional distortion. Moreover, the evidence points toward a more holistic approach to improving financial reporting quality. The findings clearly indicate that earnings management is not solely about opportunity but also about disposition. The key takeaway from this research is that the behavior of managers matters, not just as a standalone dimension but as a central variable in the relationship between governance mechanisms and integrity in financial reporting. Therefore, efforts to improve earnings quality should reinforce formal oversight while also working to mitigate risks associated with informal behaviors. However, given Iraq's unique institutional, cultural, and regulatory environment, caution is warranted in generalizing these findings to other emerging or developed markets without contextual adaptation.

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