Website:
ejournal.umm.ac.id/index.php/jrak

***Correspondence:**
gustirizal01082000@gmail.com

DOI: 10.22219/jrak.v16i1.42748

Citation:
Rizal, G. M., Fakhriyyah, D. D., Afifudin (2026). Fraud Risk Assessment: Effects Of Bias, Skepticism, And Complexity with Whistleblowing Climate as Moderator. Jurnal Reviu Akuntansi Dan Keuangan, 16(1), 258-275.

Article Process
Submitted:
November 6, 2025

Reviewed:
November 6, 2025

Revised:
January 31, 2026

Accepted:
March 31, 2026

Published:
March 31, 2026

Office:
Department of Accounting
University of
Muhammadiyah Malang
GKB 2 Floor 3.
Jalan Raya Tlogomas 246,
Malang, East Java,
Indonesia

P-ISSN: 2615-2223
E-ISSN: 2088-0685

Article Type: Research Paper

FRAUD RISK ASSESSMENT: EFFECTS OF BIAS, SKEPTICISM, AND COMPLEXITY WITH WHISTLEBLOWING CLIMATE AS MODERATOR

Gusti Muahammad Rizal[1*], Dewi Diah Fakhriyyah[2], Afifudin[3]

Affiliation:

[1,2] Faculty of Economics and Business, University of Islam Malang, Malang City, Indonesia

ABSTRACT

Purpose: This study aims to examine the effects of unconscious bias, professional skepticism, and audit complexity on fraud risk assessment quality, and to evaluate the moderating role of whistleblowing climate within organizational audit settings.

Methodology/approach: A quantitative approach using Partial Least Squares–Structural Equation Modeling (PLS-SEM) was applied to data collected from 70 internal auditors working in manufacturing firms in Gresik, Indonesia. The analysis included assessment of the measurement model and hypothesis testing for both direct and moderating effects.

Findings: Results show that professional skepticism significantly improves the quality of fraud risk assessment. Conversely, unconscious bias and audit complexity have negative but statistically insignificant effects. Whistleblowing climate significantly moderates and enhances the influence of professional skepticism but does not moderate the effects of unconscious bias or audit complexity.

Practical implications: Organizations should reinforce professional skepticism through structured training and strengthen ethical infrastructures, particularly whistleblowing systems, to support auditor judgment in fraud detection.

Originality/value: This study integrates behavioral auditor factors with ethical organizational context, offering new empirical evidence on how whistleblowing climate

interacts with auditor characteristics in shaping fraud risk assessment quality.

Keywords: Audit Complexity; Professional Skepticism; Quality of Fraud Risk Assessment; Unconscious Bias; Whistleblowing Climate

ABSTRAK

Tujuan penelitian: Penelitian ini bertujuan untuk menguji pengaruh bias tidak disadari, skeptisisme profesional, dan kompleksitas audit terhadap kualitas penilaian risiko kecurangan, serta mengevaluasi peran moderasi iklim whistleblowing dalam lingkungan audit organisasi.

Metode/pendekatan: Penelitian ini bertujuan untuk menguji pengaruh bias tidak disadari, skeptisisme profesional, dan kompleksitas audit terhadap kualitas penilaian risiko kecurangan, serta mengevaluasi peran moderasi iklim whistleblowing dalam lingkungan audit organisasi.

Hasil: Hasil penelitian menunjukkan bahwa skeptisisme profesional secara signifikan meningkatkan kualitas penilaian risiko kecurangan. Sebaliknya, bias tidak disadari dan kompleksitas audit berpengaruh negatif namun tidak signifikan. Iklim whistleblowing secara signifikan memperkuat pengaruh skeptisisme profesional, tetapi tidak memoderasi pengaruh bias tidak disadari maupun kompleksitas audit.

Implikasi praktik: Organisasi perlu memperkuat skeptisisme profesional melalui pelatihan terstruktur dan meningkatkan infrastruktur etika, khususnya sistem whistleblowing, untuk mendukung penilaian auditor dalam deteksi kecurangan.

Orisinalitas/kebaharuan: Penelitian ini mengintegrasikan faktor perilaku auditor dengan konteks etika organisasi, serta memberikan bukti empiris baru mengenai bagaimana iklim whistleblowing berinteraksi dengan karakteristik auditor dalam membentuk kualitas penilaian risiko kecurangan.

Kata kunci: Bias Tidak Sadar; Iklim Pelaporan Pelanggaran; Kompleksitas Audit; Kualitas Penilaian Resiko Kecurangan; Skeptisme Profesional.

16.1 INTRODUCTION

Fraud risk assessment plays a pivotal role in ensuring the integrity of financial reporting within organizations. The assessment process is a critical step in the audit, where auditors are

tasked with identifying and evaluating the potential risks of fraud that may materially impact the financial statements. A high-quality fraud risk assessment is essential for detecting fraud in its early stages, thereby safeguarding the organization's financial integrity (Ogunsola & Balogun, 2021). Nevertheless, the quality of fraud risk assessments is not uniform and is subject to influence by a variety of factors. Unconscious bias, for instance, may impair auditors' objectivity, leading to flawed judgment or oversight of red flags. Unconscious bias refers to the automatic and unintentional mental shortcuts that auditors may use when processing information, leading to skewed judgment and decision-making. These biases can significantly impair the accuracy of fraud risk assessments, as auditors may overlook red flags or fail to fully consider all relevant evidence. Unconscious bias is especially problematic in auditing because it occurs without the auditor's awareness, making it difficult to mitigate without deliberate efforts (Kelly & Larres, 2025). Unconscious bias in auditors can lead to less thorough evaluations of fraud risk, ultimately reducing the quality of the fraud risk assessment process (Cassell et al., 2022).

Other factor such as professional skepticism, defined as a questioning mind and a critical assessment of audit evidence, is another crucial determinant that directly affects the auditor's ability to recognize inconsistencies or irregularities (Fakhirah & Prihatiningtias, 2025). Furthermore, audit complexity that arising from multifaceted organizational structures, cross-border operations, or sophisticated financial instruments can complicate the identification and assessment of fraud risks (Liu & Xia, 2024), necessitating more advanced analytical procedures and audit techniques. Research by (Beasley & Lahey, 2024) demonstrated that auditors with a higher level of professional skepticism are better at detecting fraud because they scrutinize evidence more thoroughly and are less likely to be influenced by cognitive biases or external pressures. In this context, professional skepticism enhances the effectiveness of fraud risk assessment by ensuring that the auditor maintains objectivity. Furthermore, audit complexity also reflects the increasing intricacy of financial transactions and organizational structures, also plays a significant role in the fraud risk assessment process (Lisa et al., 2023). As businesses evolve and adopt more complex financial systems, auditors face greater challenges in identifying potential fraud risks. The complexity of audit tasks demands that auditors possess not only technical expertise but also the ability to navigate through intricate financial data and operational processes. According to (Aida, 2021) audit complexity directly affects the ability of auditors to detect fraud, as the more complex the audit, the more difficult it becomes to pinpoint fraudulent activities hidden within the data. Therefore, audit complexity serves as a barrier that can lower the quality of fraud risk assessments unless the auditors' skills and professional skepticism are properly aligned to address these challenges.

In terms of maintaining the quality of audit assessments, the whistleblowing climate within the company plays an important role in supporting auditors in their fraud detection efforts. A supportive whistleblowing climate encourages employees and stakeholders to report unethical behavior, which can provide auditors with valuable insights into potential fraud (Sigit, 2021). A strong whistleblowing climate creates an environment where fraud-related concerns are openly communicated, making it easier for auditors to identify and address risks. Organizations with a positive whistleblowing climate tend to have higher rates of fraud detection because auditors receive more comprehensive information from employees, which helps them identify fraud risks more effectively (Cassell et al., 2022).

However, the effective fraud risk assessment is achieved when auditors are able to align their cognitive strategies with the structure and complexity of audit tasks, as emphasized by Cognitive Fit Theory (Hirschheim & Newman, 1991). Simultaneously, Behavioral Decision

Theory underscores the importance of auditors being aware of their cognitive limitations and unconscious biases, which can impair professional judgment if left unchecked (Tversky & Kahneman, 1974). Additionally, the Moral Intensity Framework suggests that the likelihood of auditors taking fraud indicators seriously increases when the perceived ethical significance of the issue is high (Jones, 1991). High-quality fraud risk assessments thus require a combination of cognitive alignment, ethical sensitivity, and a consistent application of professional skepticism, especially in complex and uncertain audit environments (Saleh et al., 2025). Integrating these theoretical perspectives provides a holistic view of the cognitive, ethical, and contextual capabilities needed to uphold the integrity and quality of fraud risk assessments.

Previous studies have explored the effects of unconscious bias, professional skepticism, and audit complexity on fraud risk assessment (Kamalaruban et al., 2024). The study demonstrates that removing sensitive attributes from fraud detection models does not eliminate unconscious bias, as correlated proxy variables can still reflect hidden bias. Similarly, (Beasley & Lahey, 2024) highlighted the positive relationship between professional skepticism and fraud detection, showing that auditors with a questioning attitude are more successful in identifying fraud indicators. Furthermore, (Gunawan et al., 2022) reveals that auditor competence, professional skepticism, red flag identification, and internal control systems significantly influence fraud detection. It suggests that unconscious bias may impair an auditor's judgment, but increased skepticism and competence can mitigate this impact. (Shonhadji & Maulidi, 2021) emphasized the importance of a supportive whistleblowing climate in enhancing fraud risk detection, noting that organizations that encourage employees to report unethical behavior have higher rates of fraud detection. (Urumsah et al., 2023) found that a strong whistleblowing system enhances the effectiveness of both forensic and investigative audits in fraud detection. It indirectly supports the view that auditor awareness and an ethical environment help overcome unconscious bias in identifying fraud risks.

While prior studies have extensively examined individual factors influencing audit quality and fraud detection, such as professional skepticism, unconscious bias, and audit complexity, there remains a limited understanding of how these variables jointly impact the quality of fraud risk assessments. Moreover, most existing literature has treated these predictors in isolation, without considering the interactive or contextual factors that may shape their effects in real audit environments. Notably, the whistleblowing climate within an organization has been acknowledged as a critical element in promoting ethical behavior and facilitating early fraud detection (Perdana et al., 2020); (Utami et al., 2020) yet its moderating role in the audit judgment process, especially in the context of fraud risk assessment, has received little empirical attention. This represents a critical gap, particularly in light of increasingly complex audit settings where cognitive biases and auditor skepticism must be managed effectively. Furthermore, despite the growing call for integrated models that account for both cognitive factors (e.g., unconscious bias) and organizational context (e.g., whistleblowing climate), empirical studies adopting such a comprehensive approach are scarce. Most notably, there is insufficient research exploring how these dynamics interact under high audit complexity, a condition commonly faced in contemporary auditing practices.

The Influence of Unconscious Bias on Fraud Risk Assessment Quality (H1)

Unconscious bias, grounded in Cognitive Bias Theory, refers to the mental shortcuts and inherent biases that influence the judgment and decision-making of auditors without their

awareness. Auditors' assessments of fraud risks may be affected by biases such as confirmation bias, overconfidence, and anchoring, which lead to suboptimal or skewed evaluations (Tversky & Kahneman, 1974). These biases can distort the objectivity of fraud risk assessments, as auditors may fail to consider alternative perspectives or evidence that contradict their initial judgments. (Chui et al., 2022) found that senior auditors from Big 4 firms, when exposed to a forensic specialist's perspective, assessed fraud risk more accurately and at higher levels than those who weren't. The study demonstrates that shifting cognitive frames, uch as adopting a forensic mindset, can mitigate unconscious bias in fraud assessments. Their study highlights the importance of awareness programs to mitigate biases in audit decision-making. (Glover et al., 2022) demonstrated that unconscious bias directly impacts auditors' fraud detection ability by shaping their risk assessments, often causing them to focus on irrelevant or biased information. (García-Sánchez et al., 2012), (Drogalas et al., 2020) and (Tümmler & Quick, 2025) concluded that unconscious bias contributes to underestimating fraud risks in complex audits, which in turn lowers the quality of fraud risk assessments. They suggested that auditors who recognize their biases are more likely to conduct thorough risk evaluations.

H_1: Unconscious bias negatively affects the quality of fraud risk assessment.

The Influence of Professional Skepticism on Fraud Risk Assessment Quality (H2)

Professional skepticism, rooted in Professional Skepticism Theory, is defined as an auditor's mindset to question evidence and challenge assumptions(Kelly & Larres, 2025). This theory emphasizes the importance of maintaining a questioning attitude and critical evaluation of all information during an audit. Professional skepticism is essential in fraud risk assessments, as it drives auditors to scrutinize financial data, investigate inconsistencies, and remain alert to potential fraud indicators.(Beasley & Lahey, 2024) . found that auditors with higher levels of professional skepticism are more likely to identify fraud risks and make accurate fraud risk assessments. They argued that professional skepticism acts as a key determinant in improving audit outcomes.(Christensen et al., 2022) demonstrated that professional skepticism enhances fraud risk detection by encouraging auditors to question evidence more rigorously, leading to more accurate fraud risk assessments. Their research suggests that skepticism prevents auditors from being overly reliant on initial assumptions or biased perspectives. (Elder & Yebba, 2023) showed that auditors who exhibit greater professional skepticism are able to identify subtle indicators of fraud that might be overlooked by less skeptical auditors, resulting in a more thorough fraud risk assessment.

H_2: Professional skepticism positively affects the quality of fraud risk assessment.

The Influence of Audit Complexity on Fraud Risk Assessment Quality (H3)

Agency Theory explains that audit complexity arises from the principal-agent relationship in which auditors (agents) are tasked with providing an independent evaluation of financial statements for shareholders (principals) (M. C. Jensen & Meckling, 2019). The complexity of modern financial transactions and organizational structures increases the difficulty of fraud detection. Complex audits often involve intricate financial instruments, multi-layered operations, and a vast amount of data that require specialized knowledge and skills. (Aida, 2021) found that increased audit complexity results in more challenging fraud detection. Their study revealed that complex audits often cause auditors to focus on certain aspects of the audit while neglecting potential fraud risks due to resource limitations. (Dyer et al., 2017) found that regional auditors face significant challenges in identifying fraud in complex environments, particularly when multiple financial systems are involved. Audit complexity

leads to superficial fraud risk assessments unless auditors possess the necessary skills and experience (R. C. Jensen et al., 2022)observed that audits with high levels of complexity often suffer from a lack of clear fraud indicators, making fraud detection more difficult. Their findings suggest that increased audit complexity requires auditors to exercise more judgment and professional skepticism in evaluating fraud risks.

H_3: Audit complexity negatively affects the quality of fraud risk assessment.

The Moderating Role of Whistleblowing Climate on the Relationship between Unconscious Bias and Fraud Risk Assessment Quality (H4)

Social Exchange Theory posits that social relationships, including the relationship between employees and auditors, are shaped by exchanges of valuable information (Blau, 1964). In the context of fraud risk assessment, a supportive whistleblowing climate encourages employees to share concerns about unethical behavior, providing auditors with additional information to improve their fraud risk assessments. Whistleblowing mitigates the impact of unconscious bias by offering auditors objective insights into potential fraud, counteracting biases that might otherwise hinder fraud detection. (Jacobson, 2019) found that a strong whistleblowing climate reduces the negative effects of unconscious bias, as it provides auditors with valuable information that they may overlook due to bias. This helps auditors make more accurate fraud risk assessments. (Anderson, 2022) concluded that whistleblowing culture enhances auditors' ability to detect fraud, especially in environments where unconscious bias is prevalent. Employee are more likely to report suspicious activities in organizations with a strong whistleblowing climate, improving audit effectiveness (Eksandy, 2024). In addition, examined how whistleblowing affects auditors' judgment in fraud risk assessments, showing that a positive whistleblowing climate helps counteract the effects of unconscious bias, leading to better fraud detection outcomes.

H_4: Whistleblowing climate moderates the negative relationship between unconscious bias and fraud risk assessment quality.

The Moderating Role of Whistleblowing Climate on the Relationship between Professional Skepticism and Fraud Risk Assessment Quality (H5)

Social Exchange Theory also explains that a positive whistleblowing climate encourages auditors to adopt a more skeptical and questioning attitude towards financial data, as employees feel more empowered to report potential fraud (Kerler III et al., 2021). A supportive whistleblowing environment enhances auditors' professional skepticism, ensuring that they remain critical of the financial data and more alert to fraud risks. (Anderson, 2022)found that professional skepticism is more effectively employed in environments where whistleblowing is encouraged. In such environments, auditors are more likely to challenge assumptions and be alert to potential fraud risks. (Glover et al., 2022) showed that the presence of a strong whistleblowing culture enhances auditors' professional skepticism, making them more likely to investigate anomalies and fraud indicators in financial reports. (Ryan Beasley & Lahey, 2024) concluded that auditors working in organizations with a positive whistleblowing climate are more likely to exercise professional skepticism, leading to more thorough and accurate fraud risk assessments.

H_5: Whistleblowing climate moderates the positive relationship between professional skepticism and fraud risk assessment quality.

The Moderating Role of Whistleblowing Climate on the Relationship between Audit Complexity and Fraud Risk Assessment Quality (H6)

Social Exchange Theory also helps explain how a supportive whistleblowing climate can mitigate the negative effects of audit complexity by providing auditors with crucial information. When auditors have access to whistleblower reports, they can navigate complex audits more effectively, enabling them to identify fraud risks that might otherwise be hidden in intricate financial data. (Urumsah et al., 2023) found that auditors operating in organizations with strong whistleblowing climates perform better in complex audits, as they receive timely and valuable information that helps them detect fraud risks (Dyer et al., 2017) highlighted that a strong whistleblowing culture aids regional auditors in managing audit complexity, as it provides them with critical insights into potential fraudulent activities. (Oloko, 2024) demonstrated that whistleblowing climates reduce the negative impact of audit complexity by providing auditors with additional resources to identify fraud in complex environments.

H_6: Whistleblowing climate moderates the negative relationship between audit complexity and fraud risk assessment quality.

METHOD

Respondents and Research Location

This study involved respondents who were internal auditors working in manufacturing companies located in Gresik Regency, East Java, Indonesia. Gresik was chosen as the research site due to its status as one of the major industrial zones in Indonesia, with a high concentration of manufacturing enterprises. This setting allowed the researchers to access respondents who are directly involved in fraud risk assessment (FRA) processes. The sampling technique employed was purposive sampling, whereby participants were selected based on predetermined criteria aligned with the research objectives (Robinson, 2023). The sample criteria included: (a) currently active internal auditors working in manufacturing companies domiciled in Gresik Regency, (b) possessing a minimum of one year of work experience as an internal auditor, and (c) actively engaged in internal auditing and/or fraud risk assessment activities. Since the exact number of internal auditors in Gresik's manufacturing sector was unknown, the minimum required sample size was determined based on the analytical method used in this study. Given that the research employed Partial Least Squares Structural Equation Modeling (PLS-SEM), the sample size was calculated using the Two Thumbs Rule proposed by (Hair et al., 2021). This guideline recommends that the minimum sample size should be 10 times the maximum number of indicators used to measure a single latent variable. In this study, there were five latent variables, each measured by five indicators, resulting in a maximum of five indicators per construct. Therefore, the minimum required sample size was 50 respondents (10×5). To enhance the statistical power and ensure robust estimation, data were collected from 70 internal auditors, all of whom met the inclusion criteria and provided complete and valid responses (Santoso, 2023).

Data Collection Technique

Data were gathered using a closed-ended questionnaire designed with a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) . The questionnaires were distributed online through Google Forms to facilitate broad and efficient respondent reach, especially considering limitations in time and physical access to companies in the Gresik region. The researchers initiated preliminary communication with the internal audit or human resource departments of the selected companies to obtain consent and explain the study's purpose. Participation was strictly voluntary, and the researchers ensured the anonymity and confidentiality of the respondents and the data provided.

Research Instrument

The research instrument was a structured questionnaire designed to measure five key constructs: (1) Unconscious Bias (UB) is adapted from relevant literature, including indicators related to unconscious assumptions and the influence of personal preferences in audit judgments. (2) Professional Skepticism (PS) is measured using the scale developed by (Hurtt, 2010), which assesses auditors' disposition to question and critically evaluate audit evidence. (3) Audit Complexity (AC) is assessed through auditor perceptions regarding difficulty, volume of information, and ambiguity encountered during the audit process. (4) Whistleblowing Climate (WBC) reflects the organizational support and protection provided to individuals reporting unethical behavior or misconduct. (5) Fraud Risk Assessment Quality (FRAQ) evaluates the ability of auditors to effectively identify, analyze, and respond to potential fraud risks. Prior to full-scale data collection, a pilot study involving 20 internal auditors (outside the main sample) was conducted to test the questionnaire's validity and reliability (Matusiak et al., 2025). Item validity was assessed using item-total correlation, where items were considered valid if they had a Pearson correlation coefficient (r) > 0.30 and a significance level < 0.05. Instrument reliability was evaluated using Cronbach's Alpha, with $\alpha \geq 0.70$ indicating acceptable internal consistency. Based on the results, all constructs in the instrument were deemed both valid and reliable.

Data Analysis Technique

This study employed a quantitative research approach using Partial Least Squares Structural Equation Modeling (PLS-SEM), facilitated by SmartPLS software. The analysis followed a two-stage procedure:

1. Measurement Model Evaluation, to assess convergent validity (Average Variance Extracted > 0.50), discriminant validity, and construct reliability (Composite Reliability > 0.70).
2. Structural Model Evaluation, to test the relationships among latent variables through R-square values, f-square effect sizes, and path coefficients.

Hypotheses were tested using the bootstrapping method with a significance level of 0.05, aimed at examining the influence of unconscious bias, professional skepticism, audit complexity, and whistleblowing climate on the quality of fraud risk assessment.

RESULT AND DISCUSSION

Criteria	Sub-Criteria	Frequency	Percentage
Gender	Male	61	87%
Gender	Female	9	13%
Age	25–30	37	53%
Age	31–35	25	36%
Age	36–40	5	7%
Age	> 40	3	4%
Work Experience	1–5 years	40	57%
Work Experience	6–10 years	23	33%
Work Experience	>10 years	7	10%

Table 1. Demographic Respondents

Source: primary data, processed (2025)

The demographic profile of the respondents demonstrates a workforce that is predominantly male, with 87% of participants identifying as male and only 13% as female. In terms of age, the majority are relatively young professionals, with 53% between 25–30 years and 36% between 31–35 years, indicating that nearly nine out of ten respondents are under the age of 36. This age distribution is complemented by their work experience, where 57% have between one and five years of professional tenure, 33% possess six to ten years of experience, and only a small proportion, 10%, have worked in the field for more than a decade. Collectively, these characteristics suggest that the sample largely comprises early-career auditors who are still in the process of developing deeper professional expertise and judgment. Such a demographic composition may have important implications for the study's findings, as younger and less experienced auditors are potentially more reliant on formal audit procedures and guidance, and may encounter greater challenges in exercising independent judgment and professional skepticism, particularly when confronted with complex fraud scenarios. Additionally, the pronounced gender imbalance reflects structural patterns within the auditing profession, which may warrant further examination in relation to organizational culture and career development opportunities.

Table 2. Outher Loading Result

Variabel	Indikator	Outer Loading	Standart	Status
Unconscious Bias	UB.1	0.676	0,7	Validity
	UB.2	0.885	0,7	Validity
	UB.3	0.927	0,7	Validity
	UB.4	0.874	0,7	Validity
	UB.5	0.899	0,7	Validity
Professional Skepticism	PS.1	0.743	0,7	Validity
	PS.2	0.965	0,7	Validity
	PS.3	0.704	0,7	Validity
	PS.4	0.858	0,7	Validity
	PS.5	0.933	0,7	Validity
Audit Complexity	AC.1	0.869	0,7	Validity
	AC.2	0.974	0,7	Validity
	AC.3	0.869	0,7	Validity
	AC.4	0.895	0,7	Validity
	AC.5	0.934	0,7	Validity
Quality of Fraud Risk Assessment	FR.1	0.757	0,7	Validity
	FR.2	0.922	0,7	Validity
	FR.3	0.670	0,7	Validity
	FR.4	0.866	0,7	Validity
	FR.5	0.948	0,7	Validity
Whistleblowing Climate	WC.1	0.817	0,7	Validity
	WC.2	0.792	0,7	Validity
	WC.3	0.861	0,7	Validity
	WC.4	0.646	0,7	Validity
	WC.5	0.940	0,7	Validity

Source: primary data, processed (2025)

Variabels	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
AC	0.949	0.960	0.827
FRSQ	0.893	0.921	0.704
PS	0.898	0.926	0.717
UB	0.912	0.932	0.734
WC	0.872	0.908	0.667

Table 3. Validity and Reliability Test Results

Source: primary data, processed (2025)

Variables	R Square	R Square Adjusted
Quality of Fraud Risk Assessment	0.804	0.809

Table 4. R Square Test

Source: primary data, processed (2025)

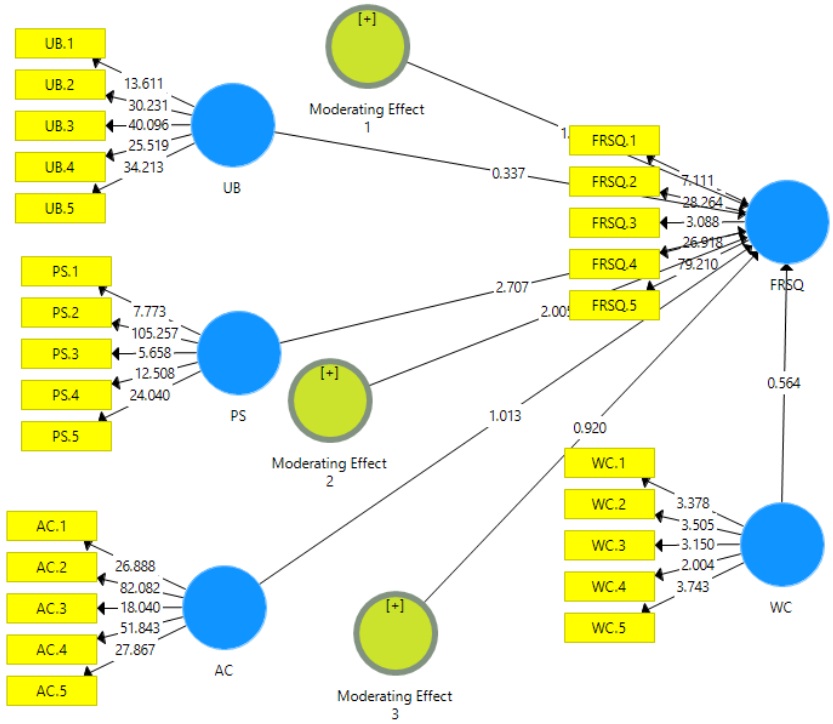

Figure 1. Partial Least Square (PLS)

Variables	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
AC -> FRSQ	-0.473	-0.343	0.467	1.013	0.312
WC x UB -> FRSQ	-1.109	-1.100	0.592	1.874	0.062
WC x PS -> FRSQ	-0.534	-0.529	0.266	2.005	0.046
WC x AC -> FRSQ	0.530	0.518	0.575	0.920	0.358
PS -> FRSQ	0.531	0.450	0.196	2.707	0.007
UB -> FRSQ	-0.168	-0.281	0.498	0.337	0.736

Table 5. Results of Direct and Indirect Hypothesis Tests

Source: primary data, processed (2025)

Outer Loading

Table 2 shows that all indicators for each construct are generally found to fulfill the requirements for convergent validity, as indicated by outer loading values exceeding the recommended threshold of 0.70, in accordance with the guidelines proposed by (Hair et al., 2021). While a few indicators (e.g., UB.1 = 0.676; FR.3 = 0.678; WC.4 = 0.646) exhibit loading values marginally below the cutoff point, their inclusion remains justifiable. This is supported by the fact that the Average Variance Extracted (AVE) and Composite Reliability (CR) values for the corresponding constructs still exceed the minimum acceptable standards (AVE ≥ 0.50; CR ≥ 0.70). Therefore, these indicators can be retained without compromising the overall construct validity and reliability of the measurement model.

Validity and Realibility Test Results

Table 3 shows that the reliability and validity assessment confirms that all constructs in the model demonstrate strong measurement quality. Cronbach's Alpha values range from 0.872 to 0.949, and Composite Reliability (CR) values from 0.908 to 0.960, indicating excellent internal consistencyh (Hair et al., 2021). In addition, Average Variance Extracted (AVE) values exceed the 0.50 threshold, ranging from 0.667 to 0.827, confirming satisfactory convergent validity by using Fornell & Larcker criterion. These results indicate that all constructs; Audit Complexity, Professional Skepticism, Unconscious Bias, Whistleblowing Climate, and Fraud Risk Assessment Quality, are measured with high reliability and validity, supporting the adequacy of the measurement model for further structural analysis.

R Square Test

Table 4 reports an R-squared (R^2) value of 0.804 for Quality of Fraud Risk Assessment, indicating that 80.4% of the variance in the dependent variable is explained by the model. This reflects strong explanatory and predictive power, significantly exceeding the 0.50 threshold commonly accepted in social sciences (Hair et al., 2019). Such a result confirms that the model's predictors meaningfully contribute to assessing fraud risk quality. Moreover, this level of explained variance indicates that the constructs included in the model are both theoretically relevant and empirically robust, providing a reliable foundation for understanding the determinants of fraud risk assessment.

Direct and Indirect Hypothesis Test Results

The path analysis results reveal that Professional Skepticism (PS) significantly enhances Fraud Risk Assessment Quality (FRSQ) (β = 0.531; p = 0.007), while Unconscious Bias (UB) and Audit Complexity (AC) show negative but insignificant effects. Among the moderation effects, the interaction between Whistleblowing Climate (WC) and Professional Skepticism is significant (β = -0.534; p = 0.046), suggesting that a strong whistleblowing climate may reduce the incremental benefit of skepticism on fraud risk assessment. The moderation between WC and UB is marginally significant (β = -1.109; p = 0.062), indicating potential for WC to weaken the negative impact of unconscious bias. Meanwhile, the interaction between WC and AC is not significant (β = 0.530; p = 0.358), implying limited moderating influence in high-complexity audit contexts.

H1: Unconscious Bias has a Negatively Insignificant effect on Fraud Risk Assessment Quality

The analysis reveals that Unconscious Bias (UB) has a negative but statistically insignificant effect on Fraud Risk Assessment Quality (FRSQ) (-0.168; p = 0.736). This result aligns with Behavioral Decision Theory (Tversky & Kahneman, 1974) which argues that unconscious

biases operate subtly and may not always manifest in observable outcomes unless triggered by environmental or contextual stressors. Prior studies also suggest that while unconscious bias can impair audit judgment, its impact may be moderated by institutional safeguards or structured audit protocols. Logically, auditors working under regulated frameworks may subconsciously rely on standardized procedures that neutralize potential bias effects. Therefore, the non-significance does not negate the theoretical relevance of unconscious bias, but suggests that its influence is often latent and conditional (Cassell et al., 2022). In terms of respondent demographics, the majority of participants, regarding work experience, over half of the auditors (57%) had between 1–5 years of experience, while 33% had 6–10 years, and only 10% had more than 10 years. This demographic composition suggests that the auditors surveyed are predominantly early-career professionals, which may influence the development and application of professional skepticism, as less experienced auditors may face greater challenges in exercising independent judgment compared to their more seasoned counterparts.

H2: Professional Skepticism has a Positive Effect on Fraud Risk Assessment Quality

Professional Skepticism (PS) has a positive and significant influence on FRSQ (0.531; p = 0.007), reinforcing its central role in audit quality. This finding is consistent with Professional Skepticism Theory (M. C. Jensen & Meckling, 2019), which highlights how complex audit settings create information asymmetry that hampers auditor effectiveness. Research by (Aida, 2021), and (Stein & Cunha, 2024) confirms that Professional skepticism leads auditors to critically assess the truthfulness of client explanations and evaluate fraud risk more cautiously. This tendency becomes more pronounced in high-risk situations, where auditors are more likely to apply heightened skeptical judgment. However, in the presence of high audit complexity, audit quality may decline due to task ambiguity and cognitive overload, which can impair judgment and decision-making. Interestingly, the lack of statistical significance in this model suggests that the negative effects of complexity may be mitigated by other factors such as auditor experience, domain expertise, or the use of advanced audit tools that support cognitive processing and reduce uncertainty. Logically, complexity alone does not degrade judgment unless coupled with insufficient cognitive or institutional resources. Given that most respondents were relatively young and had limited professional experience, this demographic profile may also contribute to variability in how complexity affects audit judgments, as less experienced auditors may rely more heavily on structured guidance and technological support to manage complex tasks.

H3: Audit Complexity has a Negatively Insignificant Effect on Fraud Risk Assessment Quality

Audit Complexity (AC) negatively affects FRSQ (-0.473), although the relationship is statistically insignificant (p = 0.312). The direction is consistent with Agency Theory (M. C. Jensen & Meckling, 1976) , which highlights how complex audit settings create information asymmetry that hampers auditor effectiveness. Research by (Aida, 2021) and (Stein & Cunha, 2024) confirms that Professional skepticism leads auditors to critically assess the truthfulness of client explanations and evaluate fraud risk more cautiously. This tendency becomes more pronounced in high-risk situations, where auditors are more likely to apply heightened skeptical judgment. However, in the presence of high audit complexity, audit quality may decline due to task ambiguity and cognitive overload, which can impair judgment and decision-making. Interestingly, the lack of statistical significance in this model suggests that the negative effects of complexity may be mitigated by other factors such as auditor experience, domain expertise, or the use of advanced audit tools that support cognitive processing and reduce uncertainty. Logically, complexity alone does not degrade judgment

unless coupled with insufficient cognitive or institutional resources. Given that most respondents were relatively young and had limited professional experience, this demographic profile may also contribute to variability in how complexity affects audit judgments, as less experienced auditors may rely more heavily on structured guidance and technological support to manage complex tasks

H4: Whistleblowing Climate Unsuccessfully Moderate Unconscious Bias and Fraud Risk Assessment Quality

The interaction effect between Whistleblowing Climate (WC) and Unconscious Bias (UB) on Fraud Risk Assessment Quality (FRAQ) The interaction effect between Whistleblowing Climate (WC) and Unconscious Bias (UB) on Fraud Risk Assessment Quality (FRAQ) was not statistically significant (-1.109; p = 0.062), indicating that WC does not significantly moderate the negative influence of UB. This finding suggests that, although a supportive whistleblowing environment may conceptually promote transparency and accountability, it may not be sufficient to counteract the cognitive distortions caused by unconscious bias in fraud detection contexts. This finding suggests that, although a supportive whistleblowing environment may conceptually promote transparency and accountability, it may not be sufficient to counteract the cognitive distortions caused by unconscious bias in fraud detection contexts. Although Social Exchange Theory (Blau, 1964) underscores the importance of trust and reciprocal norms in encouraging information sharing, the actual influence of such environments on deeply ingrained unconscious bias may be limited. Therefore, more robust cognitive safeguards may be needed to address the persistent impact of bias in fraud risk assessments, a supportive whistleblowing environment fosters trust and information sharing that can help auditors overcome biased heuristics. This result aligns with prior studies that found whistleblowing mechanisms alone may not effectively reduce judgmental bias in audit settings. For instance, (Virani & Khairani, 2023) found that the whistleblowing system, as a moderating variable, does not significantly influence the relationship between audit committee meeting frequency and fraud disclosure. This suggests that whistleblowing mechanisms alone may not enhance the effectiveness of audit committees in improving fraud risk assessment and promoting transparency. (Safitri & Rani, 2022) shows that the whistleblowing system can weaken the positive relationship between audit quality and financial reporting integrity. This implies that auditors should perform fraud risk assessment and auditing procedures rigorously, without depending on the perceived effectiveness of the company's whistleblowing system. from a logical standpoint, whistleblower tips serve as cognitive correctives that anchor auditors back to objective evaluation, thereby reducing bias-driven distortions in judgment.

H5: Whistleblowing Climate has a Moderating Effect on Professional Skepticism and Fraud Risk Assessment Quality

The interaction between WC and PS is statistically significant but negative (-0.534; p = 0.046), indicating that a strong whistleblowing climate may dilute the effect of professional skepticism. While counterintuitive, this result suggests that when organizational systems are perceived as reliable, auditors may rely less on personal vigilance (Kerler III et al., 2021), and (Glover et al., 2022) noted similar tendencies, where over-reliance on external controls reduced the depth of individual inquiry. Furthermore, the whistleblowing climate may function as a substitute rather than a complement to skepticism, leading to passive acceptance of reports rather than active interrogation of potential fraud indicators. When auditors perceive that a robust whistleblowing mechanism is in place, they may inadvertently reduce their vigilance, assuming that significant issues will be surfaced through these channels. This highlights the need to ensure that ethical infrastructure enhances, rather than

replaces, skeptical judgment. Organizations should design whistleblowing systems that reinforce auditors' responsibility to question, corroborate, and critically evaluate information, rather than fostering overreliance on formal reporting mechanisms. Without such safeguards, there is a tangible risk that whistleblowing frameworks, although well-intentioned, may unintentionally erode the professional skepticism essential for high-quality fraud risk assessment.

H6: Whistleblowing Climate Unsuccessfully Moderate Audit Complexity and Fraud Risk Assessment Quality

The interaction between WC and AC is positive but statistically insignificant (0.530; p = 0.358). This indicates that whistleblowing climate does not meaningfully buffer the complexity-induced difficulties in assessing fraud risk. Complexity often involves technical and structural issues that cannot be easily addressed through ethical reporting channels. (Urumsah et al., 2023), and (Dyer et al., 2017) support this, noting that the effectiveness of whistleblowing depends on the clarity and accessibility of reported issues. Logically, whistleblowing is better suited for detecting visible or overt misconduct rather than uncovering deeply embedded, technically sophisticated fraud schemes. Employees are more likely to report irregularities they can readily observe, such as ethical breaches or obvious policy violations, whereas complex financial manipulations often remain hidden from non-specialists. Hence, while a strong whistleblowing climate can enhance overall transparency and encourage reporting, it cannot substitute for the analytical tools, professional skepticism, and specialized expertise that auditors require to navigate complex audit environments. Relying solely on whistleblowing mechanisms creates a false sense of security, potentially leaving sophisticated fraud schemes undetected. Therefore, organizations must recognize that whistleblowing should be integrated as a complementary element within a broader framework of rigorous audit procedures and continuous professional development to ensure that complexity does not compromise fraud risk assessment.

CONCLUSION

This study concludes that among the examined variables, professional skepticism exerts a significant and positive effect on the quality of fraud risk assessment, highlighting its critical role in enhancing audit judgment and decision-making. In contrast, unconscious bias and audit complexity do not show significant direct effects, although their theoretical relevance remains strong. Notably, whistleblowing climate demonstrates significant moderating effects, particularly in buffering the negative influence of unconscious bias and altering the dynamics of professional skepticism. These findings underscore the complex interplay between individual cognition and organizational context in shaping fraud risk evaluation outcomes. The practical implications of these results are substantial. Organizations should prioritize the cultivation of professional skepticism through structured training programs, fostering auditors' ability to maintain critical inquiry under pressure. Whistleblowing systems must also be institutionalized, not only as a compliance requirement but as a strategic tool to support auditor objectivity and reduce cognitive distortions. Moreover, managing audit complexity requires more than technical expertise; it necessitates the integration of ethical infrastructure, analytic tools, and collaborative mechanisms to ensure comprehensive fraud detection processes. Future research should expand on this study by examining potential mediating mechanisms, such as audit experience or time pressure, which may influence the effects of unconscious bias and complexity. Longitudinal studies could capture how these relationships evolve over audit cycles. Further, exploring cross-sectoral differences and incorporating qualitative approaches may offer deeper insight into the contextual nuances of

auditor behavior. Overall, this study contributes to a more holistic understanding of fraud risk assessment by integrating behavioral, structural, and ethical dimensions within a unified empirical framework.

REFERENCES

Aida, N. (2021). Work experience, obedience pressure and task complexity on audit judgment. *Golden Ratio of Auditing Research*, *1*(2), 61–69. https://doi.org/10.52970/grar.v1i2.51

Anderson, P. D. (2022). On Moderate and Radical Government Whistleblowing: Edward Snowden and Julian Assange as Theorists of Whistleblowing Ethics. *Journal of Media Ethics*, *37*(1), 38–52. https://doi.org/10.1080/23736992.2021.2014847

Beasley, R., & Lahey, J. (2024). Correspondence Audit Studies in Public Administration: A systematic review with commentary. *Journal of Behavioral Public Administration*, *7*. https://doi.org/10.30636/jbpa.71.345

Blau, P. M. (1964). Justice in social exchange. *Sociological Inquiry*, *34*(2). https://doi.org/10.1111/j.1475-682x.1964.tb00583.x

Cassell, C. A., Dearden, S. M., Rosser, D. M., & Shipman, J. E. (2022). Confirmation Bias and Auditor Risk Assessments: Archival Evidence. *Auditing: A Journal of Practice & Theory*, *41*(3), 67–93. https://doi.org/10.2308/ajpt-2020-035

Christensen, B., Schmardebeck, R., & Seidel, T. (2022). Do auditors' incentives affect materiality assessments of prior-period misstatements? *Accounting, Organizations and Society*, *101*, 101332. https://doi.org/10.1016/j.aos.2021.101332

Chui, L., Curtis, M. B., & Pike, B. J. (2022). How does an audit or a forensic perspective influence auditors' fraud-risk assessment and subsequent risk response? *Auditing: A Journal of Practice & Theory*, *41*(4), 57–83. https://doi.org/10.2308/ajpt-19-125

Drogalas, G., Nerantzidis, M., Samaras, M., & Pazarskis, M. (2020). Audit committee and factors that affect its characteristics: the case of Greece. *International Journal of Disclosure and Governance*, *17*(4), 181–194. https://doi.org/10.1057/s41310-020-00081-2

Dyer, J. E., Hartley, S., & Thompson, A. (2017). Does regional audit improve practice in the management of urological cancers? *Journal of Clinical Urology*, *10*(1), 13–16. https://doi.org/10.1177/2051415816664265

Eksandy, A. (2024). The Influence of the Whistleblowing System, Internal Audit, and Organizational Culture on the Prevention of Financial Fraud. *Proceeding International Economic Conference of Business and Accounting*, *2*(01), 407–421. https://doi.org/10.1145/3690771.3690783

Elder, R. J., & Yebba, A. A. (2023). Auditing nonprofit entities. In *Research Handbook on Nonprofit Accounting* (pp. 174–191). Edward Elgar Publishing. https://doi.org/10.4337/9781800888289.00018

Fakhirah, S., & Prihatiningtias, Y. W. (2025). Auditor Behavior Analysis: The Effect of Self-Efficacy, Audit Risk and Audit Experience on Audit Judgment. *Jurnal Reviu Akuntansi Dan Keuangan*, *15*(2), 496–510. https://doi.org/10.22219/jrak.v15i2.40645

García-Sánchez, I., Frias-Aceituno, J. V., & Garcia-Rubio, R. (2012). Determining Factors

of Audit Committee Attributes: Evidence from Spain. *International Journal of Auditing*, *16*(2), 184–213. https://doi.org/10.1111/j.1099-1123.2012.00451.x

Glover, S. M., Hansen, J. C., & Seidel, T. A. (2022). How has the change in the way auditors determine the audit report date changed the meaning of the audit report date? Implications for academic research. *Auditing: A Journal of Practice & Theory*, *41*(1), 143–173. https://doi.org/10.1111/j.1099-1123.2012.00451.x

Gunawan, K., Riyanal, M. F., & Handoko, B. L. (2022). THE EFFECT OF AUDITOR COMPETENCE, PROFESSIONAL SKEPTICISM, RED FLAG, AND INTERNAL CONTROL SYSTEM ON FRAUD DETECTION. *Journal of Applied Finance & Accounting*, *9*(2). https://doi.org/10.21512/jafa.v9i2.8972

Hair, J. F., Astrachan, C. B., Moisescu, O. I., Radomir, L., Sarstedt, M., Vaithilingam, S., & Ringle, C. M. (2021). Executing and interpreting applications of PLS-SEM: Updates for family business researchers. *Journal of Family Business Strategy*, *12*(3), 100392. https://doi.org/10.1016/j.jfbs.2020.100392

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2–24. https://doi.org/10.1108/ebr-11-2018-0203

Hirschheim, R., & Newman, M. (1991). Symbolism and Information Systems Development: Myth, Metaphor and Magic. *Information Systems Research*, *2*(1), 29–62. https://doi.org/10.1287/isre.2.1.29

Hurtt, R. K. (2010). Development of a scale to measure professional skepticism. *Auditing: A Journal of Practice & Theory*, *29*(1), 149–171. https://doi.org/10.2308/aud.2010.29.1.149

Jacobson, C. M. (2019). *The effect of racial confirmation biases on whistleblowing intent*. https://doi.org/https://dc.ewu.edu/theses/561

Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firm: Managerial. *Journal of Financial Economics*, *3*, 305–360. https://doi.org/10.1016/0304-405x(76)90026-x

Jensen, M. C., & Meckling, W. H. (2019). Theory of the firm: Managerial behavior, agency costs and ownership structure. In *Corporate governance* (pp. 77–132). Gower. https://doi.org/10.2139/ssrn.94043

Jensen, R. C., Bird, R. L., & Nichols, B. W. (2022). Risk Assessment Matrices for Workplace Hazards: Design for Usability. *International Journal of Environmental Research and Public Health*, *19*(5), 2763. https://doi.org/10.3390/ijerph19052763

Jones, T. M. (1991). Ethical Decision Making by Individuals in Organizations: An Issue-Contingent Model. *The Academy of Management Review*, *16*(2), 366. https://doi.org/10.2307/258867

Kamalaruban, P., Pi, Y., Burrell, S., Drage, E., Skalski, P., Wong, J., & Sutton, D. (2024). Evaluating Fairness in Transaction Fraud Models: Fairness Metrics, Bias Audits, and Challenges. *Proceedings of the 5th ACM International Conference on AI in Finance*, 555–563. https://doi.org/10.1145/3677052.3698666

Kelly, M., & Larres, P. (2025). Enhancing the auditor's mindset: a framework for nurturing professional skepticism. *Journal of Accounting Literature*, *47*(1), 222–243.

https://doi.org/10.1108/JAL-07-2023-0122

Kerler III, W. A., Fleming, A. S., & Allport, C. D. (2021). The Effect of Whistleblower Source and Tip Frame on Internal Auditors' Judgments and Actions. *Journal of Forensic Accounting Research*, *6*(1), 149–175. https://doi.org/10.2308/JFAR-2020-007

Lisa, O., Muawanah, U., Heriyadi, H., & Dahlan, A. (2023). Internal Control As A Mediator Of Audit Quality. *Jurnal Reviu Akuntansi Dan Keuangan*, *13*(3), 570–587. https://doi.org/10.22219/jrak.v13i3.29188

Liu, J., & Xia, Q. (2024). The impact of industry technology complexity on audit quality. *Technology in Society*, *79*, 102737. https://doi.org/10.1016/j.techsoc.2024.102737

Matusiak, B., Sarey Khanie, M., Moscoso, C., Pálsdóttir, A. M., Appelt, S., Hemauer, C., Martiny, K., Miskowiak, K. W., Lindegaard, I. A., & Ysbæk-Nielsen, A. T. (2025). View Quality Assessments: A Pilot Study of Field Methods. *Leukos*, 1–21. https://doi.org/10.1080/15502724.2024.2443188

Ogunsola, K. O., & Balogun, E. D. (2021). Enhancing Financial Integrity Through an Advanced Internal Audit Risk Assessment and Governance Model. *International Journal of Multidisciplinary Research and Growth Evaluation*, *2*(1), 781–790. https://doi.org/10.54660/.IJMRGE.2021.2.1.781-790

Oloko, E. (2024). *Auditors' Perceptions and Experiences Regarding Internal Controls Mitigating Employee Fraud in Businesses*. Capella University. https://doi.org/10.15760/honors.306

Perdana, H., Mohamed, N., Joseph, C., & Utami, I. (2020). Fraud, Whistleblowing System, and Behavioral Aspect in Public Sector. *Proceedings of the Proceedings of The First International Conference on Financial Forensics and Fraud, ICFF, 13-14 August 2019, Bali, Indonesia*. https://dx.doi.org/10.4108/eai.13-8-2019.2294251

Robinson, R. S. (2023). Purposive Sampling. In *Encyclopedia of Quality of Life and Well-Being Research* (pp. 5645–5647). Springer International Publishing. https://doi.org/10.1007/978-3-031-17299-1_2337

Ryan Beasley, & Lahey, J. (2024). Correspondence Audit Studies in Public Administration: A systematic review with commentary. *Journal of Behavioral Public Administration*, *7*. https://doi.org/10.30636/jbpa.71.345

Safitri, A. E., & Rani, P. (2022). Peran Komisaris Independen, Komite Audit Dan Kualitas Audit Terhadap Integritas Laporan Keuangan Dimoderasi Oleh Whistleblowing System. *AkunNas*, *19*(1), 58–72. https://doi.org/10.34005/kinerja.v5i01.2220

Saleh, S., Diab, A., & Abouelela, O. (2025). Firm Complexity and the Accuracy of Auditors' Going Concern Opinions in Emerging Markets: Does Auditor Work Stress Matter? *Journal of Risk and Financial Management*, *18*(3), 108. https://doi.org/10.3390/jrfm18030108

Santoso, A. (2023). Rumus Slovin : Panacea Masalah Ukuran Sampel ? *Suksma: Jurnal Psikologi Universitas Sanata Dharma*, *4*(2), 24–43. https://doi.org/10.24071/suksma.v4i2.6434

Shonhadji, N., & Maulidi, A. (2021). The roles of whistleblowing system and fraud awareness as financial statement fraud deterrent. *International Journal of Ethics and*

Systems, *37*(3), 370–389. https://doi.org/10.1108/ijoes-09-2020-0140

Sigit, H. (2021). Can Retaliation Moderate The Influence Of Personal Cost, Professional Commitment And Ethical Environment On Pns Interest In Whistleblowing? *Jurnal Reviu Akuntansi Dan Keuangan*. https://doi.org/10.22219/jrak.v11i2.16902

Stein, E., & Cunha, P. R. da. (2024). Professional skepticism of internal auditors and perception of risks in internal controls. *Revista Contabilidade & Finanças*, *35*(96). https://doi.org/10.1590/1808-057x20241922.en

Tümmler, M., & Quick, R. (2025). How to detect fraud in an audit: a systematic review of experimental literature. *Management Review Quarterly*. https://doi.org/10.1007/s11301-024-00480-7

Tversky, A., & Kahneman, D. (1974). Judgment under Uncertainty: Heuristics and Biases. *Science*, *185*(4157), 1124–1131. https://doi.org/10.1126/science.185.4157.1124

Urumsah, D., Rahmida, M., Hamdani, R., & Aji, S. S. B. (2023). The impact of whistle-blowing on the effectiveness of forensic audits and investigative audits in fraud detection: A multigroup analysis of gender and experience. *Journal of Contemporary Accounting*, 163–179. https://doi.org/10.20885/jca.vol5.iss3.art4

Utami, N. M. M. A., Irianto, G., & Prihatiningtias, Y. W. (2020). Analyzing the effect of financial reward, personal cost and reporting channel on whistleblowing intentions utilizing an experimental study. *International Journal of Research in Business and Social Science (2147- 4478)*, *9*(2), 125–132. https://doi.org/10.20525/ijrbs.v9i2.614

Virani, A., & Khairani, S. (2023). Peran Frekuensi Rapat Komite Audit dimoderasi Whistleblowing System Terhadap Pengungkapan Fraud. *MDP Student Conference*, *2*(2), 46–53. https://doi.org/10.35957/mdp-sc.v2i2.3963