



Artificial Intelligence Readiness, Whistleblowing Systems, and Professional Skepticism in Higher-Education Fraud Detection

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Abstract

Background: Digital transformation has increased the complexity of fraud risks in higher education institutions, requiring governance mechanisms, professional judgment, and technological capabilities to operate in combination.

Objective: This research investigates the influence of *Whistleblowing Systems* and *Professional Skepticism* on *Fraud Detection Effectiveness* while examining the direct and moderating roles of *Artificial Intelligence Readiness*.

Methods: A quantitative methodology was employed through a cross-sectional survey involving internal auditors, members of Internal Supervisory Units (*Satuan Pengawasan Internal* [SPI]), and university staff engaged in governance and fraud prevention across Indonesian higher education institutions. The collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM).

Results: The findings reveal that *Whistleblowing Systems*, *Professional Skepticism*, and *Artificial Intelligence Readiness* each have a positive and statistically significant effect on *Fraud Detection Effectiveness*. *Artificial Intelligence Readiness* also significantly strengthens the relationship between *Whistleblowing Systems* and *Fraud Detection Effectiveness* but does not significantly moderate the relationship between *Professional Skepticism* and *Fraud Detection Effectiveness*.

Conclusion: These results suggest that artificial intelligence supports fraud detection not by replacing auditors' professional judgment but by strengthening organizational preparedness to integrate intelligent technologies into governance frameworks. Therefore, effective fraud detection in higher education depends on the synergy among organizational governance, human expertise, and *Artificial Intelligence Readiness*.

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INTRODUCTION

The accelerated progression of digital technologies has profoundly reshaped how organizations manage financial information, operational processes, and governance structures. While digital transformation has significantly improved organizational efficiency and

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accountability, it has concurrently amplified the sophistication of fraudulent activities. Fraud schemes now extend beyond conventional financial manipulation to include digital transactions, procurement irregularities, misuse of research funding, cyber-enabled misconduct, and sophisticated financial reporting practices. Consequently, fraud detection is no longer viewed solely as an auditing function but also as a strategic governance mechanism that supports transparency, accountability, and public trust ([Examiners, 2024](#)).

Higher education institutions are particularly vulnerable to these challenges because they manage substantial public resources through tuition fees, government appropriations, research grants, procurement activities, scholarships, and collaborative partnerships involving multiple stakeholders. The increasing complexity of these activities, combined with rapidly digitalized administrative systems, creates greater opportunities for fraud when governance mechanisms fail to function effectively. In Indonesia, several corruption cases involving universities including procurement irregularities, misuse of research funds, and financial management misconduct have highlighted the importance of strengthening internal control systems and fraud detection practices. These cases demonstrate that fraud prevention and detection should be regarded as strategic governance priorities rather than merely compliance requirements ([Watch, 2024](#)). These concerns are consistent with recent studies emphasizing the roles of internal control, internal audit quality, and accountability mechanisms in strengthening Good University Governance among Indonesian state universities with legal entity status ([Hariyati et al., 2025](#); [Hasibuan et al., 2025](#); [Kamila & Munajat, 2025](#); [Pahala et al., 2019](#)).

To strengthen organizational integrity, universities have implemented various governance mechanisms. Among these, the Whistleblowing System (WBS) has become one of the most important instruments for identifying unethical behavior and organizational misconduct by providing secure channels for reporting suspected violations. Likewise, professional skepticism enables internal auditors to critically evaluate audit evidence, question unusual transactions, and identify fraud indicators that may otherwise remain undetected ([Nazria et al., 2025](#)). Previous studies consistently demonstrate that both whistleblowing systems and professional skepticism contribute positively to fraud detection. However, these mechanisms are often examined independently, creating a fragmented understanding of how organizational governance and auditors' professional judgment interact to strengthen fraud detection.

The growing sophistication of fraud has further motivated organizations to investigate Artificial Intelligence (AI) as a mechanism for enhancing fraud detection through anomaly identification, predictive analytics, machine learning, natural language processing, and continuous auditing. Nevertheless, this study does not conceptualize Artificial Intelligence as a replacement for auditors or existing governance mechanisms. Instead, AI is viewed as an enabling organizational capability whose effectiveness depends on an organization's capacity to adopt and integrate intelligent technologies into fraud detection processes. Accordingly, the value of AI lies not in replacing professional judgment but in supporting auditors and strengthening governance mechanisms through more timely, comprehensive, and data-driven analysis.

Despite growing scholarly interest in whistleblowing systems, professional skepticism, and Artificial Intelligence, several important research gaps remain. First, earlier research has largely investigated these variables in isolation, offering a constrained understanding of how governance mechanisms, auditors' professional judgment, and intelligent technologies collectively influence fraud detection effectiveness. Second, empirical evidence concerning AI-enabled fraud detection has largely focused on banking, financial institutions, and corporate organizations, whereas higher education institutions remain relatively underexplored. Third, existing studies generally conceptualize Artificial Intelligence as a technological tool, with limited attention given to the organizational readiness required for its effective implementation. Finally, most prior research employs quantitative approaches that explain whether relationships exist but provide limited insights into why Artificial Intelligence succeeds or fails in strengthening fraud detection within organizational settings.

Responding to these gaps, this research investigates the influence of Whistleblowing Systems and Professional Skepticism on Fraud Detection Effectiveness while testing the direct and moderating roles of Artificial Intelligence Readiness in Indonesian higher education institutions. A quantitative cross-sectional survey combined with Partial Least Squares Structural Equation

Modeling (PLS-SEM) was employed to provide empirical evidence for the proposed relationships.

This study makes two principal contributions. First, it develops an integrated framework linking Whistleblowing Systems, Professional Skepticism, and Artificial Intelligence Readiness to Fraud Detection Effectiveness in higher education institutions. Second, it conceptualizes Artificial Intelligence Readiness as an enabling organizational capability rather than treating AI merely as a stand-alone technological tool. The quantitative cross-sectional design provides empirical evidence regarding the direct and moderating relationships among these constructs.

Overall, this study argues that effective fraud detection in higher education depends not solely on technological advancement but on the integration of governance mechanisms, professional judgment, and organizational readiness to adopt Artificial Intelligence.

Whistleblowing System and Fraud Detection

The Whistleblowing System (WBS) is widely recognized as an essential governance mechanism for preventing and detecting organizational fraud. It provides employees and stakeholders with secure and confidential channels to disclose suspected misconduct, unethical conduct, or breaches of organizational policies. From the perspective of Agency Theory, whistleblowing systems reduce information asymmetry between principals and agents by promoting the disclosure of information that would otherwise remain concealed. As a result, whistleblowing contributes to greater organizational transparency, accountability, and institutional integrity.

In the context of higher education institutions, the significance of whistleblowing systems has grown considerably due to the increasing complexity of financial management, procurement activities, research funding, scholarship administration, and collaborations involving multiple stakeholders. These conditions create opportunities for fraud if effective governance mechanisms are not properly implemented. Consequently, whistleblowing systems have become an integral component of Good University Governance, supporting not only ethical reporting but also organizational accountability and fraud prevention.

Previous empirical studies consistently support the positive role of whistleblowing systems in strengthening fraud detection. Rozali and Fitriani (2024) argue that whistleblowing mechanisms become effective only when organizations provide adequate protection for whistleblowers and demonstrate a genuine commitment to investigating reported misconduct. Similarly, Paranoan et al. (2024) found that ethical awareness, organizational support, and favorable attitudes toward whistleblowing significantly encourage individuals to report fraudulent behavior. Supporting these findings, Examiners (2024) routinely recognizes whistleblower tips as among the most productive sources for detecting occupational fraud worldwide. These findings are corroborated by a growing body of research linking whistleblowing systems to fraud prevention across diverse institutional contexts, including internal auditors' fraud detection ability Wahidahwati and Asyik, (2022), internal audit and big data analytics in financial crime prevention Putra et al., (2022), forensic accounting and generalized audit software Achmad et al., (2024), organizational control and religiosity Maulidi et al., (2024), and professional commitment Pangestu and Rahajeng (2020).

Nevertheless, the effectiveness of whistleblowing systems should not be interpreted merely as the availability of reporting channels. Without organizational commitment, timely investigation, and appropriate follow-up actions, whistleblowing mechanisms may fail to generate meaningful improvements in fraud detection. Furthermore, previous studies have predominantly examined whistleblowing systems from behavioral and ethical perspectives, emphasizing reporting intentions, whistleblower protection, and ethical climate. Recent studies continue to affirm the importance of these conditions, including whistleblowing intention among internal auditors Antoh et al., (2024), sustainable professional commitment Hanifah and Clyde, (2025), ethical leadership and moral reasoning Achyani et al. (2025), and authentic leadership through trust and moral courage (Achyani et al., 2025; Pulungan et al., 2021). Comparatively fewer studies have investigated how whistleblowing systems directly improve fraud detection effectiveness within higher education institutions, particularly in the context of digital transformation. This indicates that whistleblowing systems should be viewed not only as reporting mechanisms but also as strategic governance instruments that strengthen fraud detection within increasingly

digital organizational environments.

Drawing upon Agency Theory and prior empirical evidence, this study argues that an effective whistleblowing system facilitates the early identification of fraudulent activities, improves organizational transparency, and enhances fraud detection effectiveness within higher education institutions. However, whistleblowing systems primarily generate information regarding suspected fraud; the effectiveness of these reports ultimately depends on auditors' ability to critically evaluate the reported information before appropriate audit conclusions can be reached. Therefore, the following hypothesis is proposed:

H1: Whistleblowing System positively influences Fraud Detection Effectiveness in Higher Education Institutions.

Professional Skepticism and Fraud Detection

Professional skepticism is broadly recognized as an essential characteristic of auditors in performing effective audits and detecting fraud. According to International Standard on Auditing (ISA) 200 Board (2024), professional skepticism refers to an attitude that includes a questioning mind, alertness to conditions that may indicate possible misstatement due to fraud or error, and a critical assessment of audit evidence. Rather than taking information at face value, auditors who exercise professional skepticism continually assess the reliability, sufficiency, and consistency of available evidence before reaching professional conclusions. In this sense, professional skepticism is not merely a personal characteristic but an essential element of sound audit judgment.

The significance of professional skepticism becomes increasingly apparent in fraud detection because fraudulent activities are often intentionally concealed through document manipulation, collusion, management override, or misleading financial information. Consequently, auditors are expected not only to verify compliance with established procedures but also to question unusual transactions and investigate inconsistencies that may indicate fraudulent behavior. Within higher education institutions, where financial management involves multiple funding sources, procurement processes, research grants, and diverse stakeholders, professional skepticism fulfills a vital function in ensuring that potential fraud indicators are not disregarded during audit engagements.

Empirical evidence consistently supports the contribution of professional skepticism to fraud detection. Nazria et al. (2025) describe professional skepticism as a multifaceted construct comprising an inquiring mind, deferred judgment, pursuit of knowledge, interpersonal understanding, self-assurance, and autonomous determination. Building on this framework, subsequent studies have shown that auditors possessing higher levels of professional skepticism demonstrate greater capability in recognizing fraud indicators, critically evaluating audit evidence, and making more reliable audit judgments (Amyar et al., 2023; Anggiriawan et al., 2024; Citranagari, 2022; Hamshari et al., 2021; Khairunnisa et al., 2025; Nurleni et al., 2024). These findings suggest that professional skepticism reinforces auditors' capacity to identify material misstatements and fraudulent activities that might otherwise remain undetected. These results are further reinforced by evidence connecting professional skepticism to audit quality control systems (Suhayati & Thufailah, 2024), red flag awareness and self-efficacy Ramadhany et al. (2025), and ethical judgment in fraud investigation (Pramiudi et al., 2025).

Despite this growing body of evidence, previous studies have largely treated professional skepticism as an individual behavioral characteristic of auditors. Comparatively less attention has been given to understanding how professional skepticism operates within increasingly digital audit environments, particularly in higher education institutions. As organizations increasingly produce greater volumes of digital information, auditors must handle more complex evidence within compressed timeframes. Under these conditions, professional skepticism remains indispensable; however, its effectiveness increasingly depends on the availability of analytical support capable of assisting auditors in identifying anomalies, evaluating patterns, and interpreting complex information without compromising their professional judgment.

Drawing upon the concept of professional skepticism and prior empirical evidence, this study argues that auditors exhibiting heightened professional skepticism are better prepared to critically appraise audit evidence, identify fraud indicators, and improve fraud detection effectiveness within higher education institutions. Nevertheless, as fraud schemes become more

sophisticated and data-intensive, professional judgment alone may not always be sufficient to process the growing complexity of audit evidence. Consequently, organizations require technological capabilities that complement rather than replace auditors' professional skepticism in strengthening fraud detection. Therefore, the following hypothesis is proposed:

H2: Professional Skepticism positively influences Fraud Detection Effectiveness in Higher Education Institutions.

Artificial Intelligence Readiness as an Enabling Capability for Fraud Detection

The escalating intricacy of organizational fraud has redirected the discourse from whether Artificial Intelligence (AI) can support fraud detection to whether organizations are sufficiently prepared to adopt and integrate intelligent technologies into their governance processes. Developments in machine learning, predictive analytics, natural language processing, anomaly identification, and continuous auditing have substantially broadened the potential of AI to assist in fraud detection. However, the effective deployment of these technologies hinges not merely on technological availability but also on an organization's preparedness to employ them productively. Accordingly, this study views Artificial Intelligence Readiness as an organizational capability that enables institutions to maximize the benefits of intelligent technologies in fraud detection.

Rather than replacing auditors or organizational governance mechanisms, Artificial Intelligence Readiness reflects an organization's capability to integrate technology into existing fraud detection processes. This capability encompasses technological infrastructure, data availability, organizational support, human competencies, and institutional commitment to digital transformation. When these conditions are present, intelligent technologies are expected to complement whistleblowing systems by facilitating the analysis of reported information and supporting auditors in processing increasingly complex audit evidence. Therefore, AI should be understood as an enabling capability that strengthens governance rather than as an autonomous solution for fraud detection.

Previous studies generally report that Artificial Intelligence contributes positively to fraud detection through faster data processing, anomaly identification, continuous monitoring, and predictive analytics. For instance, integrating natural language processing, AI-powered data analytics, and electronic whistleblowing systems has been demonstrated to bolster organizational fraud detection capacity [Tan et al., \(2025\)](#), while auditors' big data competencies significantly improve fraud detection effectiveness [Dewi et al., 2024, \(2025\)](#). Similarly, the interaction between professional skepticism, big data analytics, and forensic accounting strengthens financial fraud detection [Handoko and Rosita \(2022\)](#), and auditor competency coupled with professional skepticism enhances audit quality in remote audit contexts [Handoko and Sardjono, \(2022\)](#), developments that reflect a broader shift toward digitalized audit practices ([Hajiyev et al., 2025](#)). Nevertheless, the existing literature predominantly conceptualizes AI as a technological tool whose effectiveness is assumed to derive from the technology itself. Relatively limited attention has been given to the organizational conditions required for successful AI implementation, particularly within higher education institutions where governance structures, resource availability, and digital maturity vary considerably. Consequently, evidence explaining how organizational readiness influences the contribution of AI to fraud detection remains limited.

This study argues that the efficacy of Artificial Intelligence relies not solely on technological sophistication but also on organizational preparedness to adopt and deploy intelligent technologies. Organizations that are better prepared to implement AI are expected to improve fraud detection directly while simultaneously enhancing the effectiveness of whistleblowing systems and auditors' professional skepticism. From this perspective, Artificial Intelligence Readiness functions as an enabling organizational capability that supports, rather than replaces, human professional judgment and existing governance mechanisms.

Drawing upon the Dynamic Capability perspective and prior empirical evidence, this research posits that Artificial Intelligence Readiness positively contributes to fraud detection effectiveness and strengthens the relationships between Whistleblowing Systems and Fraud Detection Effectiveness and between Professional Skepticism and Fraud Detection Effectiveness. Therefore, the following hypotheses are advanced:

- H3: Artificial Intelligence Readiness positively influences Fraud Detection Effectiveness in Higher Education Institutions.
- H4: Artificial Intelligence Readiness positively moderates the relationship between Whistleblowing Systems and Fraud Detection Effectiveness.
- H5: Artificial Intelligence Readiness positively moderates the relationship between Professional Skepticism and Fraud Detection Effectiveness.

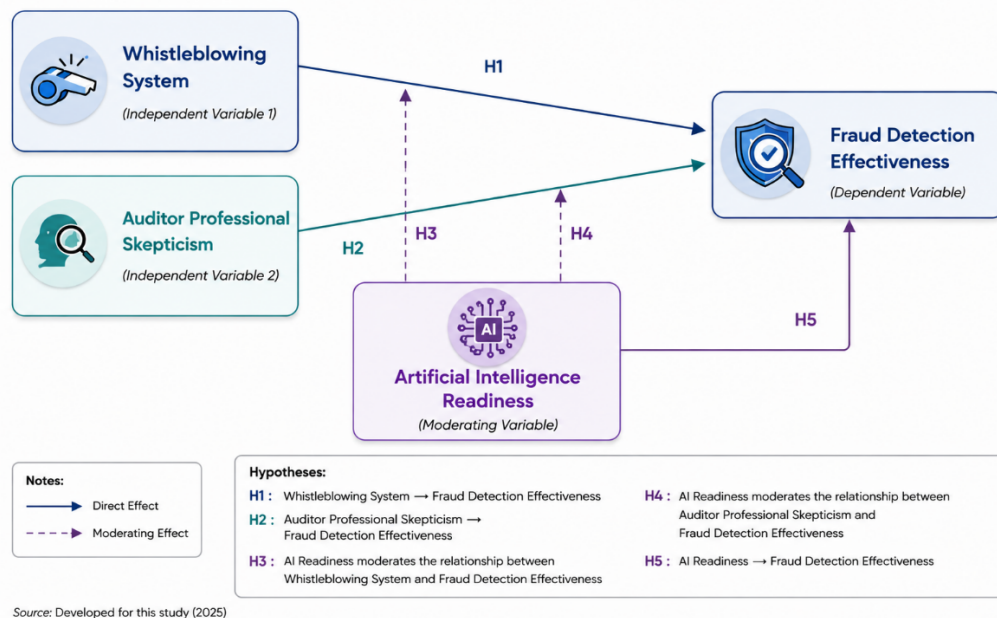


Figure 1. Conceptual Framework

METHOD

This research employed a quantitative methodology and a cross-sectional survey design to examine the associations among Whistleblowing System, Professional Skepticism, Artificial Intelligence Readiness, and Fraud Detection Effectiveness in Indonesian higher education institutions. This design was appropriate because the research assessed direct and moderating relationships at a single point in time using Partial Least Squares Structural Equation Modeling (PLS-SEM).

The target population consisted of internal auditors, Internal Supervisory Unit (SPI) members, and university staff responsible for governance, internal control, or fraud prevention in higher education institutions in Indonesia. Because no complete national sampling frame for these specialized roles was available, the population size could not be reliably enumerated; consequently, a nonprobability sampling approach was adopted.

Purposive sampling was employed. Eligible respondents were required to occupy one of the designated institutional roles and to have direct involvement in internal supervision, auditing, governance, internal control, or fraud-prevention activities. The structured questionnaire was distributed electronically, and 115 complete and eligible responses were retained for analysis. Participation was voluntary, and responses were analyzed in aggregate.

Multi-item measures were derived from the sources outlined in Table 1 and evaluated using a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The measurement dimensions covered reporting-channel security and confidentiality, reporting procedures, and organizational follow-up for the Whistleblowing System; an inquiring mindset and critical assessment of audit evidence for Professional Skepticism; technological infrastructure, data availability, organizational support, human competencies, and institutional commitment for Artificial Intelligence Readiness; and the timely identification, assessment, and investigation of fraud indicators for Fraud Detection Effectiveness. The final questionnaire items retained the substantive meaning of the source constructs while being contextualized to the higher education governance setting.

Table 1

Variable Measurement

Variable	Role	Measurement Dimensions	Source
Whistleblowing System	Exogenous	Reporting-channel security /confidentiality; reporting procedures; organizational follow-up.	Rozali and Fitriani (2024) ; Paranoan et al. (2024)
Professional Skepticism	Exogenous	Questioning mind; critical assessment of audit evidence.	Nazria et al. (2025)
Artificial Intelligence Readiness	Exogenous and moderator	Technological infrastructure; data availability; organizational support; human competencies; institutional commitment.	Anh et al. (2024)
Fraud Detection Effectiveness	Endogenous	Timely identification, assessment, and investigation of fraud indicators.	Examiners (2024) ; Achmad et al. (2024)

Source: Developed for this study (2026)

The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS. The measurement model was evaluated using outer loadings, Cronbach's alpha, composite reliability, average variance extracted (AVE), and discriminant validity. Indicators and constructs were assessed against the prespecified criteria before interpreting the structural model and path relationships.

The structural model was evaluated using collinearity diagnostics, path coefficients, the coefficient of determination (R^2), predictive relevance (Q^2), effect size (f^2), and bootstrapping for hypothesis testing. Artificial Intelligence Readiness was modeled as both a direct predictor and a moderator through two interaction terms: Artificial Intelligence Readiness $\times$ Whistleblowing System and Artificial Intelligence Readiness $\times$ Professional Skepticism.

RESULTS AND DISCUSSION

Result

Respondent Characteristics

In total, 115 complete and valid responses were collected from internal auditors, members of Internal Supervisory Units (SPI), and university personnel responsible for governance and fraud prevention in Indonesian higher education institutions. All respondents met the role-based inclusion criteria and had direct involvement in internal control, auditing, governance, or fraud-prevention activities. The available dataset did not contain a sufficiently detailed and consistently coded demographic breakdown; therefore, no unverified subgroup counts were introduced.

Hypothesis Testing

The structural model was evaluated using Partial Least Squares Structural Equation Modeling (PLS-SEM) with the bootstrapping procedure. Table 2 summarizes the results of the hypothesis testing.

Table 2

Hypothesis Testing

Hypothesis	Path	β	t-value	p-value	Decision
H1	WBS $\rightarrow$ Fraud Detection	0.336	6.786	< 0.001	Supported
H2	Professional Skepticism $\rightarrow$ Fraud Detection	0.429	7.288	< 0.001	Supported
H3	AI Readiness $\rightarrow$ Fraud Detection	0.209	3.914	< 0.001	Supported
H4	AI Readiness $\times$ WBS $\rightarrow$ Fraud Detection	0.019	2.667	0.008	Supported

Hypo-thesis	Path	β	t-value	p-value	Decision
H5	AI Readiness $\times$ Professional Skepticism $\rightarrow$ Fraud Detection	0.021	0.591	0.554	Not supported

Source: Developed by the authors (2026)

Whistleblowing System and Fraud Detection Effectiveness

The empirical results demonstrate that the Whistleblowing System exerts a positive and statistically significant influence on Fraud Detection Effectiveness ($\beta = 0.336$, $t = 6.786$, $p < 0.001$), supporting H1. This result implies that the provision of secure and confidential reporting channels enables higher education institutions to detect fraudulent activities more efficiently by encouraging employees and stakeholders to disclose suspected misconduct. In organizations characterized by multiple funding sources and complex financial transactions, such as universities, whistleblowing systems serve as an important mechanism for revealing information that is often inaccessible through routine monitoring or conventional audit procedures.

From the perspective of Agency Theory, this finding suggests that whistleblowing systems reduce information asymmetry between principals and agents by enabling the disclosure of information that would otherwise remain concealed (Zahra et al., 2024). Unlike traditional internal controls, which primarily rely on periodic supervision, whistleblowing systems provide a supplementary governance layer by permitting potential fraud to be disclosed directly by individuals who possess firsthand knowledge of organizational misconduct. Consequently, fraud detection effectiveness may be strengthened because organizations gain earlier access to information that may indicate irregularities or unethical behavior.

The present findings reinforce previous empirical evidence. Rozali and Fitriani (2024) argued that whistleblowing mechanisms become effective only when organizations establish not only confidential reporting channels but also credible procedures for investigating reported misconduct and protecting whistleblowers. Likewise, Paranoan et al. (2024) demonstrated that organizational support and ethical awareness significantly encourage whistleblowing behavior, thereby improving fraud reporting. These findings are further supported by Examiners (2024), which routinely reports that whistleblower tips continue to be the most productive source for detecting occupational fraud, often identifying fraudulent activities earlier than internal audits or management reviews.

These findings offer important implications for higher education governance. Establishing a whistleblowing system should not be regarded merely as a means of fulfilling regulatory requirements or demonstrating institutional compliance. Instead, universities should position whistleblowing as a strategic governance instrument that reinforces transparency, accountability, and institutional integrity. To achieve this objective, confidential reporting channels must be accompanied by whistleblower protection, transparent investigation procedures, and strong managerial commitment to responding appropriately to reported misconduct. Strengthening these governance practices will enable higher education institutions to improve fraud detection effectiveness while fostering a culture of ethical accountability.

Discussion

Professional Skepticism and Fraud Detection Effectiveness

Professional Skepticism was similarly identified as having a positive and statistically significant influence on Fraud Detection Effectiveness ($\beta = 0.429$, $t = 7.288$, $p < 0.001$), supporting H2. This finding indicates that auditors who consistently maintain an inquiring mindset and critically evaluate audit evidence are more capable of identifying fraud indicators than those who rely solely on routine audit procedures. In higher education institutions, where financial transactions involve research grants, procurement activities, scholarships, and multiple funding sources, professional skepticism enables auditors to recognize unusual patterns, challenge inconsistent information, and investigate potential irregularities before they develop into more significant organizational problems.

This finding is consistent with the concept of professional skepticism articulated in

International Standard on Auditing (ISA) 200 Board (2024), which emphasizes that auditors should maintain an inquiring mindset and rigorously evaluate audit evidence throughout the audit process. Rather than accepting explanations or documentation at face value, professionally skeptical auditors continuously evaluate the reliability, sufficiency, and consistency of available evidence before forming audit conclusions. Consequently, professional skepticism serves not only as an individual characteristic but also as an essential professional competency that enhances the quality of fraud detection.

The present findings corroborate the work of Nazria et al. (2025), who described professional skepticism as a multifaceted construct comprising an inquiring mind, deferred judgment, pursuit of knowledge, interpersonal understanding, self-assurance, and autonomous determination. They are also consistent with the findings of Hamshari et al. (2021) and Khairunnisa et al. (2025), which demonstrate that auditors exhibiting higher levels of professional skepticism have a greater ability to recognize fraud indicators, evaluate audit evidence impartially, and generate more reliable audit judgments. Collectively, these studies suggest that professional skepticism remains an important human capability in detecting fraud, particularly in organizations facing increasingly complex governance challenges.

From a practical standpoint, these findings suggest that enhancing fraud detection in higher education institutions necessitates more than technological investment or formal governance mechanisms. Universities must also invest in developing auditors' professional competencies through continuous training, professional education, and practical experience that reinforce critical thinking and objective judgment. As fraud schemes become increasingly sophisticated and supported by digital technologies, professional skepticism remains indispensable because effective fraud detection ultimately depends on auditors' capacity to interpret evidence critically and render well-founded professional judgments.

Artificial Intelligence Readiness as an Enabling Organizational Capability

An interesting pattern emerges from the findings related to Artificial Intelligence Readiness (AIR). While AIR demonstrates a significant direct influence on Fraud Detection Effectiveness and strengthens the relationship between the Whistleblowing System and Fraud Detection Effectiveness, it does not significantly moderate the relationship between Professional Skepticism and Fraud Detection Effectiveness. This set of findings indicates that the contribution of Artificial Intelligence to fraud detection is selective rather than universal. Instead of functioning as an autonomous technological solution, Artificial Intelligence appears to create greater value when organizations are adequately prepared to integrate intelligent technologies into their existing governance processes.

The empirical results indicate that Artificial Intelligence Readiness exerts a positive and statistically significant direct influence on Fraud Detection Effectiveness ($\beta = 0.209, t = 3.914, p < 0.001$), supporting H3. This result suggests that organizations exhibiting greater preparedness to adopt and deploy Artificial Intelligence are better positioned to enhance their fraud detection capabilities. From the perspective of Dynamic Capabilities Theory (Anh et al., 2024), organizational performance is influenced not merely by possessing advanced technologies but also by the capability to integrate, deploy, and continuously adapt those technologies in response to environmental challenges. Within the context of higher education institutions, AI readiness represents an institution's preparedness in terms of technological infrastructure, data availability, organizational support, and human competencies required to utilize intelligent technologies effectively. Therefore, improving fraud detection is not simply a matter of investing in Artificial Intelligence but also of ensuring that institutions possess the organizational capability to adopt and implement AI successfully.

Beyond its direct contribution, Artificial Intelligence Readiness also significantly strengthens the relationship between the Whistleblowing System and Fraud Detection Effectiveness ($\beta = 0.019, t = 2.667, p = 0.008$), supporting H4. This result indicates that organizations with greater AI readiness are better positioned to convert whistleblowing reports into actionable information for fraud detection. Whistleblowing systems generate valuable reports regarding suspected misconduct; however, the effectiveness of these reports depends on how efficiently organizations process, analyze, and respond to the information received.

Organizations that are more prepared to adopt Artificial Intelligence are likely to benefit from intelligent data analytics, automated report classification, anomaly detection, and real-time monitoring, thereby enabling reported information to be evaluated more accurately and promptly. These findings reinforce the argument that Artificial Intelligence should be viewed as an enabling organizational capability that strengthens governance mechanisms rather than replacing them.

In contrast, Artificial Intelligence Readiness does not significantly moderate the relationship between Professional Skepticism and Fraud Detection Effectiveness ($\beta = 0.021, t = 0.591, p = 0.554$), resulting in H5 not being supported. Although Artificial Intelligence can improve data processing and analytical efficiency, professional skepticism remains fundamentally a cognitive and behavioral capability that relies on auditors' critical thinking, professional judgment, and accumulated experience. The ability to question evidence, recognize inconsistencies, and evaluate complex audit situations cannot be developed solely through technological readiness. Consequently, while Artificial Intelligence can support auditors by providing more comprehensive and timely information, the ultimate responsibility for interpreting audit evidence and exercising professional judgment remains with the auditor. This finding highlights that intelligent technologies complement rather than substitute for the human capabilities required for effective fraud detection. Plausible explanations include uneven data quality, differences in auditors' experience with analytical systems, and variation in institutional readiness dimensions. Because the interaction was nonsignificant, these explanations remain interpretations for future testing rather than causal conclusions.

Taken together, these findings extend the current understanding of Artificial Intelligence in fraud detection. In contrast to earlier studies that predominantly frame Artificial Intelligence as a technological tool, this research demonstrates that the efficacy of AI hinges on an organization's preparedness to embrace and incorporate intelligent technologies into its governance processes. Artificial Intelligence Readiness therefore functions as an enabling organizational capability that directly enhances fraud detection and strengthens selected governance mechanisms, particularly the Whistleblowing System. However, the nonsignificant moderating effect on Professional Skepticism confirms that technology cannot replace auditors' cognitive judgment. Effective fraud detection in higher education is therefore achieved through the integration of organizational governance, human expertise, and technological readiness rather than through technology alone.

CONCLUSION

This study found that the Whistleblowing System (H1), Professional Skepticism (H2), and Artificial Intelligence Readiness (H3) positively affected Fraud Detection Effectiveness. Artificial Intelligence Readiness significantly moderated the relationship between the Whistleblowing System and Fraud Detection Effectiveness (H4), although the modest interaction coefficient suggested a limited practical magnitude. In contrast, Artificial Intelligence Readiness did not significantly moderate the relationship between Professional Skepticism and Fraud Detection Effectiveness (H5). These findings indicate that organizational preparedness strengthened the utilization of governance information in fraud detection but did not supplant the cognitive judgment underpinning auditors' Professional Skepticism.

Theoretically, this study integrated governance mechanisms, human professional judgment, and technological readiness within a single fraud-detection framework and positioned Artificial Intelligence Readiness as an enabling organizational capability. Practically, higher education institutions should combine credible whistleblower protection and follow-up procedures with auditor competency development, sound data governance, adequate technological infrastructure, and organizational support for AI adoption. The study was limited by its cross-sectional design, purposive sampling, and quantitative approach. Future research should employ longitudinal or mixed-methods designs and conduct comparative analyses across institutions, sectors, or national contexts to provide a broader understanding of the role of Artificial Intelligence Readiness in fraud detection.

From a practical perspective, the findings indicate that universities should reinforce whistleblowing systems, continually cultivate auditors' professional competencies, and advance

institutional preparedness for Artificial Intelligence adoption as complementary strategies for strengthening fraud detection. This study is limited to the quantitative examination of higher education institutions in Indonesia. Future studies are encouraged to incorporate qualitative approaches to explore organizational experiences, implementation challenges, and institutional factors that influence Artificial Intelligence adoption in fraud detection. Cross-national or cross-sectoral comparative studies may additionally yield broader insights into the role of Artificial Intelligence Readiness in reinforcing organizational governance and fraud prevention.

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AUTHOR CONTRIBUTION STATEMENT

Tryas Chasbiandani contributed to the conceptualization, research design, methodology, data analysis, and drafting of the manuscript. Gunawan Baharuddin contributed to data collection, investigation, interpretation of the findings, and manuscript preparation. Hindradjid Harsono contributed to conceptual development, methodology, validation, and supervision. Muhammad Rafli Kristianto contributed to data processing, statistical analysis, visualization, and interpretation of the results. Elsa Rahma Kartika contributed to data collection, validation, manuscript preparation, and final manuscript refinement. All authors participated in the advancement of the study and endorsed the final version of the manuscript.

REFERENCES

- Achmad, T., Huang, C.-Y., Putra, M. A., & Pamungkas, I. D. (2024). Forensic accounting and risk management: Exploring the impact of generalized audit software and whistleblowing systems on fraud detection in Indonesia. *Journal of Risk and Financial Management*, 17(12), 573. <https://doi.org/10.3390/jrfm17120573>
- Achyani, F., Fatchan, I. N., Fatchan, F. H., & Fauzan. (2025). Virtue and valor: Examining how ethical leadership and moral reasoning propel whistleblowing intentions. *Problems and Perspectives in Management*, 23(3), 555–566. [https://doi.org/10.21511/ppm.23\(3\).2025.40](https://doi.org/10.21511/ppm.23(3).2025.40)
- Amyar, F., Rahma, A. E., Azis, N. A., & Suwarno, S. (2023). The effect of auditor's professional skepticism and whistleblowing system on fraud detection: Evidence from Indonesian public sector audit. *Research Horizon*, 3(4), 477–486.
- Anggiriawan, I. P. B., Jayawarsa, A. A. K., & Pratama, I. G. S. (2024). Auditor independence and experience in fraud detection: The crucial role of professional skepticism. *International Journal of Accounting and Management Studies*, 5(5), 1240–1248.
- Anh, N. T. M., Hoa, L. T. K., Thao, L. P., Nhi, D. A., Long, N. T., Truc, N. T., & Ngoc Xuan, V. (2024). The effect of technology readiness on adopting artificial intelligence in accounting and auditing in Vietnam. *Journal of Risk and Financial Management*, 17(1), 27. <https://doi.org/10.3390/jrfm17010027>
- Antoh, A., Sholihin, M., Sugiri, S., & Arifa, C. (2024). A perspective on the whistleblowing intention of internal auditors: An integrated ethical decision-making model. *Cogent Business & Management*, 11(1), 2292817. <https://doi.org/10.1080/23311975.2023.2292817>
- Board, I. A. and A. S. (2024). *International Standard on Auditing (ISA) 200: Overall objectives of the independent auditor and the conduct of an audit in accordance with International Standards on Auditing*. IFAC.
- Citranagari, M. P. (2022). The effect of professional skepticism, experience of investigative auditors and whistleblowing system on auditor's ability in detecting fraud. *Journal of Research in Social Science, Economics and Management*, 2(1), 72–82. <https://doi.org/10.36418/jrssem.v2i1.219>
- Dewi, N. S., Faiza, S. N., Said, J., & Julian, L. (2025). Influence of big data competencies and self-
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- efficacy on detection of financial statement fraud on internal auditors in Indonesia. *Management and Accounting Review*, 24(1), 353–381.
- Dewi, N. S., Said, J., Faiza, S. N., & Julian, L. (2024). The effect of big data competencies and tone at the top on internal auditors fraud detection effectiveness. *Decision Science Letters*, 13(1), 153–160. <https://doi.org/10.5267/dsl.2023.10.005>
- Examiners, A. of C. F. (2024). *Occupational fraud 2024: A report to the nations*. Association of Certified Fraud Examiners.
- Hajiyev, F., Babayev, N., & Gasimov, F. (2025). Organisation and areas of development of international audit in the digital economy. *Scientific Bulletin of Mukachevo State University. Series Economics*, 12(2), 23–33. <https://doi.org/10.52566/msu-econ2.2025.23>
- Hamshari, Y. M., Ali, H. Y., & Alqam, M. A. (2021). The relationship of professional skepticism to the risks of auditing and internal control, and the discovery of fraud and core errors in the financial statements in Jordan. *Academic Journal of Interdisciplinary Studies*, 10(2), 105–117. <https://doi.org/10.36941/ajis-2021-0042>
- Handoko, B. L., & Rosita, A. (2022). The Effect of Skepticism, Big Data Analytics to Financial Fraud Detection Moderated by Forensic Accounting. *Proceedings of the 6th International Conference on E-Commerce, E-Business and E-Government*, 123–130. <https://doi.org/10.1145/3537693.3537703>
- Handoko, B. L., & Sardjono, C. T. (2022). The Impact of Auditor's Competency, Audit Risk, and Professional Skepticism to Audit Quality in Fraud Detection Using Remote Audit. *Proceedings of the 8th International Conference on Industrial and Business Engineering*, 160–166. <https://doi.org/10.1145/3568834.3568845>
- Hanifah, I. A., & Clyde, V. (2025). Professional sustainable commitment and whistleblowing intention. *Corporate Governance and Sustainability Review*, 9(2), 29–41. <https://doi.org/10.22495/cgsrv9i2p3>
- Hariyati, H., Asandimitra, N., & Kusumawati, N. D. (2025). Good University Governance (GUG): Determinants and performance outcomes for state universities with legal entities (PTNBH) in East Java. *Global Business & Finance Review*, 30(4), 40–47.
- Hasibuan, R. P. S., Fahmi Natigor Nasution, Rina Br Buki, & Robert Sibarani. (2025). What Drives Financial Management In Indonesian State Universities With Legal Entity Status (Ptn Bh)? Evidence From Internal Oversight Units. *Lex Localis - Journal Of Local Self-Government*, 23(11). <https://doi.org/10.52152/801827>
- Kamila, N. R., & Munajat, D. E. (2025). The role of internal audit in the implementation of good university governance to improve financial management accountability (Case study at PTN-BH, Universitas Pendidikan Indonesia). *Eduvest – Journal of Universal Studies*, 5(7).
- Khairunnisa, H., Zairin, G. M., Amirul, S. M., Prihatni, R., & Rachman, H. (2025). Unveiling the auditor's lens: Impact of workload, time pressure, professional skepticism, and competence to fraud detection. *Studies in Business and Economics*, 20(1), 77–95. <https://doi.org/10.2478/sbe-2025-0005>
- Maulidi, A., Girindratama, M. W., Putra, A. R., Sari, R. P., & Nuswantara, D. A. (2024). Qualitatively beyond the ledger: Unravelling the interplay of organizational control, whistleblowing systems, fraud awareness, and religiosity. *Cogent Social Sciences*, 10(1), 2320743. <https://doi.org/10.1080/23311886.2024.2320743>
- Nazria, S. N. F. S. M., Razalib, F. M., Zolkafli, S., Urusd, S. T., & Triani, N. N. A. (2025). Professional Skepticism and Financial Statement Fraud Detection among Malaysian and Indonesian Auditors: A Cross-Cultural Analysis. *International Journal of Research and Innovation in Social Science*, VIII(XV), 206–220. <https://doi.org/10.47772/IJRISS.2024.815EC0016>
- Nurleni, N., Darmawati, D., & Mediaty, M. (2024). Enhancing fraud detection capacities: The role of auditor training, professional skepticism, and integrity in government internal control mechanisms in Indonesia. *Revista de Gestão Social e Ambiental*, 18(8), e06002. <https://doi.org/10.24857/rgsa.v18n8-094>
- Pahala, I., Sudarma, M., Sutrisno, & Rosidi. (2019). Accountability in stakeholders perspective: Views from State University of Jakarta with a phenomenological approach. *Academy of Accounting and Financial Studies Journal*, 23(2).
- Pangestu, F., & Rahajeng, D. K. (2020). The effect of power distance, moral intensity, and
- 2329 | Journal of Business, Social and Technology

- professional commitment on whistleblowing decisions. *Journal of Indonesian Economy and Business*, 35(2), 144–162.
- Paranoan, N., Padolo, A., Patiung, N., & Palalangan, C. A. (2024). Examining the integrity of whistleblowing systems and apparatus in the context of fraud prevention. *International Journal of Public Policy and Administration Research*, 11(4), 137–149. <https://doi.org/10.18488/74.v11i4.4003>
- Pramiudi, U., Isa, Y. M., Sanusi, Z. M., Subowo, H., & Silahtaroglu, G. (2025). Auditors' ethical judgment in fraud investigation: The roles of emotional intelligence, moral courage and competency. *Asia-Pacific Management Accounting Journal*, 20(3), 273–302.
- Pulungan, A. H., Sari, K. J. A. T., Maharsi, S., & Hasudungan, A. (2021). Authentic leadership and whistleblowing: The mediating roles of trust and moral courage. *Jurnal Kajian Akuntansi*, 5(2), 265–289.
- Putra, I., Sulistiyo, U., Diah, E., Rahayu, S., & Hidayat, S. (2022). The influence of internal audit, risk management, whistleblowing system and big data analytics on the financial crime behavior prevention. *Cogent Economics & Finance*, 10(1), 2148363. <https://doi.org/10.1080/23322039.2022.2148363>
- Ramadhany, A. A., Erlina, E., Sadalia, I., & Fachrudin, K. A. (2025). Enhancing fraud detection performance: The interplay of red flag awareness, self-efficacy, and professional skepticism. *Journal of Risk and Financial Management*, 18(6), 301. <https://doi.org/10.3390/jrfm18060301>
- Rozali, R. D. Y., & Fitriani, I. (2024). Whistleblowing systems as an effort to prevent fraud in state universities with legal rights (PTN-BH). *Jurnal Riset Akuntansi Kontemporer*, 16(2), 169–180. <https://doi.org/10.23969/jrak.v16i2.12480>
- Suhayati, E., & Thufailah, A. A. (2024). Fraud detection: Professional skepticism and quality control system. *Jurnal Economia*, 20(3), 374–387. <https://doi.org/10.21831/economia.v20i1.56492>
- Tan, C., Cyntia, C., & Handoko, B. L. (2025). Integration of NLP, AI-driven data analysis, risk assessment, and electronic whistle-blowing systems in fraud detection. *Edelweiss Applied Science and Technology*, 9(6). <https://doi.org/10.55214/25768484.v9i6.7955>
- Wahidahwati, W., & Asyik, N. F. (2022). Determinants of Auditors Ability in Fraud Detection. *Cogent Business & Management*, 9(1). <https://doi.org/10.1080/23311975.2022.2130165>
- Watch, I. C. (2024). *Laporan hasil pemantauan tren korupsi tahun 2023*. Indonesia Corruption Watch.
- Zahra, F., Abdullah, M. I., Din, M., Fadli, M., Besar, H. A. H., & Ali, J. K. (2024). Investigating the Structural Model of Whistle Blowing System on Government Procurement Fraud: Examining Mediating Effect of Investigative Audit. *International Journal of Economics and Financial Issues*, 14(6), 302–309. <https://doi.org/10.32479/ijefi.16150>