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Professional Ethics and Innovation in Public Accounting: Safeguarding Auditor Independence in Indonesia's Digital Environment

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Abstract
Digital transformation is reshaping public accounting in Indonesia by expanding the use of remote audit procedures, cloud-based records, analytics, and artificial intelligence while creating new risks for professional judgment. This study examines the association of professional ethics knowledge, digital competence, and organizational ethical culture with ethical perceptions and intended conduct, and considers the implications for auditor independence. The submitted study describes a mixed-methods design combining a literature and policy review with a purposively recruited cross-sectional survey of 312 public accountants, corporate accountants, and accounting students. Using the numerical results reported in the source manuscript, ethics knowledge and organizational culture were positively associated with ethical behavior intention (reported regression coefficients 0.42 and 0.35, respectively), while digital competence showed a smaller positive association (0.18). Digital competence correlated with ethical perception ($r = 0.34$), and organizational ethical culture reportedly moderated the competence–intention relationship (interaction coefficient 0.22, $p = 0.003$). Privacy, client-data access, and remote procedures were prominent perceived digital risks. These associations should not be interpreted causally, and the underlying dataset and model outputs were not available for independent verification. The article distinguishes direct threats to independence from wider confidentiality, audit-quality, and governance risks and situates the discussion within Indonesia's updated professional ethics framework. It recommends a risk-based combination of technology governance, professional skepticism, ethical leadership, and targeted continuing education.

Keywords
Auditor independence; professional ethics; digital competence; organizational ethical culture; public accounting; artificial intelligence; Indonesia.

1. Introduction
Audit credibility rests on the auditor's capacity to exercise independent judgment, demonstrate integrity, protect confidential information, and obtain sufficient appropriate evidence. Digital transformation has altered how these obligations are performed. Auditors increasingly exchange client information through remote systems, analyze high-volume transaction records with automated tools, and rely on software vendors to support audit workflows. These developments can improve coverage, timeliness, and anomaly detection, but they can also magnify risks arising from cybersecurity failures, opaque models, overreliance on technology, and restricted access to audit evidence. The challenge is not simply to introduce innovation but to ensure that its use remains compatible with ethical duties and the public interest (Kamarudin et al., 2022) (International Auditing and Assurance Standards Board, 2025).

The Indonesian context makes the issue particularly salient. Research on public accountants emphasizes the importance of compliance with ethical standards (Chang et al., 2022) (Nafiisa et al., 2023), while evidence concerning ethical climates suggests that organizational contexts influence how accounting professionals interpret and respond to ethical demands (SeTin et al., 2024). Studies of digital competence and technology acceptance in accounting demonstrate that the capacity to use new tools is uneven and should not be equated with ethical judgment (Mukhlasin et al., 2024) (Sudaryanto et al., 2023). Digital competencies therefore need to be evaluated alongside ethical knowledge, safeguards, and professional skepticism.

The regulatory baseline has also evolved. The Institut Akuntan Publik Indonesia issued its 2025 professional code of ethics incorporating technology-related revisions aligned with the international ethics framework (Institut Akuntan Publik Indonesia, 2025). The Indonesian professional ethics framework thus cannot accurately be described as wholly silent on technology. Rather, the research question is whether practitioners and firms can translate principles-based requirements into operational procedures for remote engagement work, third-party platforms, algorithmic outputs, data protection, and responsibility for professional decisions. The 2025 international ethics handbook and contemporaneous auditing standards provide additional normative context (International Ethics Standards Board for Accountants, 2025) (International Auditing and Assurance Standards Board, 2025).

Existing studies offer related but partially disconnected perspectives: professional ethics and independence (Kamarudin et al., 2022), organizational ethical culture (SeTin et al., 2024) (Wijayani & Ratmono, 2022), digital literacy (Mukhlasin et al., 2024) (Isabella et al., 2024), and accounting education (Jurana et al., 2023) (Rakotoarisoa et al., 2022). A central gap is the limited integration of these domains into a single account of how digital skills interact with professional norms and organizational controls. The present article addresses that gap by clarifying the conceptual pathways and organizing the empirical patterns reported in the supplied manuscript, without presenting the unverified statistics as independently replicated findings.

Accordingly, the study asks: (RQ1) How are ethics knowledge, digital competence, and organizational culture associated with ethical perceptions and intentions? (RQ2) Which digital practices are perceived as salient ethical, quality, or independence-related risks? (RQ3) Does the reported evidence support a conditional role for organizational ethical culture? (RQ4) What safeguards follow from the current Indonesian and international professional ethics frameworks? The contribution is a focused distinction between technological capability and professionally justified decision-making, linked to practical governance implications for accounting firms and educators.

2. Literature Review

2.1. Professional ethics, independence, and skepticism

Professional ethics in accounting is commonly articulated through integrity, objectivity, professional competence and due care, confidentiality, and professional behavior. Auditor independence adds specific requirements intended to protect impartiality in audit and review engagements. Independence of mind concerns the ability to reach a conclusion without inappropriate influences; independence in appearance concerns the perspective of a reasonable and informed third party. Ethical conduct and independence are related but not interchangeable: a failure of confidentiality may constitute a serious ethical breach without automatically establishing an independence violation, and the use of an algorithm does not in itself negate independence (International Ethics Standards Board for Accountants, 2025) (Institut Akuntan Publik Indonesia, 2025).

Independence threats are conventionally analyzed through self-interest, self-review, advocacy, familiarity, and intimidation. Their relevance in a digital environment depends on the actual relationships and decision rights involved—for example, whether a service provider has financial interests in an audit client, whether a firm audits outputs of its own non-assurance technology implementation, or whether digital access restrictions pressure the audit team to accept incomplete evidence. Professional skepticism remains essential when technology provides a persuasive or apparently precise result that has not been independently evaluated (Kamarudin et al., 2022) (International Auditing and Assurance Standards Board, 2025).

2.2. Digital competence and technology-related ethical risk

Digital competence encompasses the ability to locate, assess, process, secure, and critically interpret digitally mediated information. For accountants, this includes understanding data provenance, cybersecurity exposures, analytical assumptions, model limitations, and the boundaries of automated decision support. Technology-readiness and perceived usefulness may predict adoption, but adoption cannot be treated as a direct measure of ethical quality (Sudaryanto et al., 2023). Evidence on digital divides among accounting students is relevant to uneven preparedness for technology-intensive professional work (Mukhlasin et al., 2024).

Technology-enabled auditing creates several analytically distinct risk domains. Confidentiality and data privacy address access to and protection of client information. Evidence sufficiency concerns the availability, authenticity, completeness, and reliability of audit records. Algorithmic reliability concerns model drift, bias, explainability, and validation. Independence is directly implicated where a technology-dependent relationship, conflict, or pressure compromises—or appears to compromise—objectivity. Separating these domains avoids misclassifying every operational or data-security problem as an independence breach (International Ethics Standards Board for Accountants, 2025) (International Auditing and Assurance Standards Board, 2025).

2.3. Organizational ethical culture and institutional context

Organizational ethical culture comprises shared expectations, leadership conduct, policies, reporting channels, accountability mechanisms, and the practical consequences of misconduct. It can condition whether employees

challenge questionable evidence or defer to automated recommendations. Comparative research on Indonesian accountants has linked perceived ethical environments to organizational settings (SeTin et al., 2024), while research on fraud has associated ethical culture with preventive capacity (Wijayani & Ratmono, 2022). Institutional pressures—from regulators, clients, firms, and professional associations—may reinforce or weaken these practices.
A supportive culture can plausibly help translate digital competence into ethical action by rewarding escalation, documentation, and independent professional judgment. However, cultural moderation is an empirical question rather than a foregone conclusion. It is also conceptually different from mediation: moderation concerns whether an association varies with organizational culture; mediation concerns whether an intermediate variable explains an association. The submitted manuscript reports a statistically significant interaction and therefore supports the language of moderation only as a reported statistical result.

2.4. Ethics education and professional formation

Education and continuing professional development can connect technical understanding with practical ethical reasoning. Indonesian scholarship underscores the place of professional values in accounting education (Jurana et al., 2023), ethical orientation among students (Hermawan et al., 2023), and ethical behavioral intentions (Rakotoarisoa et al., 2022) (Rahmawan & Falikhatun, 2024). Work on digital citizenship and pedagogical competence offers adjacent insights into critical digital engagement, although general digital-citizenship findings should not be presumed to establish auditor-specific causal effects (Isabella et al., 2024) (Isdendi et al., 2023) (Fu & Satrianawati, 2022).
Ethics instruction is most defensible when it includes case-based evaluations of the sufficiency of digital evidence, third-party dependence, privacy obligations, and the need to override misleading automated outputs. Findings about spiritual intelligence and ethical perception (Istiariani & Arifah, 2020) and student perceptions of accounting fraud (Hidajat, 2024) can inform curriculum design, but their distinct populations and measures do not substitute for evidence from practicing auditors.

2.5. Conceptual framework and propositions

The conceptual framing combines a professional-values perspective with an institutional account of organizational norms. Ethics knowledge is expected to be positively associated with ethical perception and intended conduct (P1); digital competence may be associated with these outcomes but need not be sufficient by itself (P2); stronger organizational ethical culture may reinforce ethical conduct (P3); and culture may condition the relationship between digital competence and ethical intention (P4). In addition, perceived digital-environment risk may be negatively associated with respondents' self-reported ability to maintain independence (P5). These propositions reconstruct the hypotheses implicit in the original study; they are not presented as preregistered hypotheses.

3. Research Methods

3.1. Design and analytical scope

The source manuscript identifies a mixed-methods approach, pairing review of literature and policy materials with a cross-sectional questionnaire and several quantitative models. For accuracy, the review component is described here as an integrative narrative review: the supplied material does not provide search strings, database-specific retrieval dates, screening counts, exclusion reasons, or a reproducible systematic-review protocol. Likewise, the statistical results below are transcribed and critically interpreted from the submitted document rather than recalculated from participant-level observations.

3.2. Setting, participants, and sampling

The submitted study reports 312 participants in Indonesia: 98 public accountants, 127 corporate accountants, and 87 accounting students. It describes purposive recruitment through electronic questionnaire distribution and refers to respondents from metropolitan centers including Jakarta, Surabaya, and Bandung. Eligibility criteria, recruitment period, number invited, response rate, institutional distribution, and the distinction between public-company and private-company subsamples were not supplied. The descriptive sample may therefore illuminate the respondents included in the manuscript but cannot establish national representativeness.

3.3. Constructs and instruments

The reported questionnaire used a five-point Likert-type response format and assessed ethics knowledge, technology readiness, digital competence, perceived independence threats, ethical perceptions, ethical behavior intention, and organizational ethical culture. The source also mentions demographic covariates, idealism, relativism, accounting knowledge, and religiosity. However, item wording, construct assignment, adaptation process, pilot-testing results, reliability coefficients, validity evidence, missing-data procedures, and the exact scale anchors were not provided. Accordingly, no claim of instrument validation is made for the present dataset.

Table 1. Constructs, analytical roles, and measurement descriptions (reorganized from the source manuscript)

Analytical role	Constructs retained from the submitted study	Measurement described
Candidate predictors	Professional ethics knowledge; digital competence; technology readiness	Five-point questionnaire items
Outcomes	Ethical perception; independence maintenance; ethical behavior intention	Five-point questionnaire items
Potential moderators	Organizational ethical culture; digital-environment characteristics	Questionnaire items; interaction modeling
Covariates	Gender; educational attainment; professional experience	Categorical/continuous self-report

Note. The original questionnaire and scoring rules were not attached; construct validity and coding cannot be independently assessed.

3.4. Quantitative and qualitative analysis

The original manuscript states that descriptive statistics, two-group comparisons, correlations, multiple regression, an interaction model, and structural equation modeling (SEM) were conducted. It also refers to content analysis of scholarly and policy sources, with NVivo cited as a potential tool. The original software files, code, model specifications, bootstrapping choices, estimator, assumptions tests, degrees of freedom for group comparisons, and qualitative coding trail were not available. Thus, this revision reports the published-style summary statistics as author-supplied outputs and avoids inventing additional tests.

For any subsequent reproducibility audit, the following checks are essential: verify item coding and internal consistency; identify sample sizes for each comparison; report group means and confidence intervals; evaluate linear-model assumptions and multicollinearity; specify whether regression coefficients are standardized or unstandardized; include interaction-term centering and conditional slopes; and report the SEM estimator, measurement model, model degrees of freedom, validity indicators, and complete fit statistics. These are reporting requirements and recommendations, not analyses claimed to have been performed in this revision.

3.5. Research ethics and data provenance

The submitted text states that respondents participated voluntarily and that institutional approval was obtained, but it gives no committee name, approval identifier, consent script, or data-management protocol. These details must be confirmed by the authors before publication. The current revision received only the manuscript file; no raw questionnaire dataset, codebook, survey instrument, or statistical software output was provided. This limitation governs the interpretation of all empirical numbers in Section 6.

4. Results

4.1. Sample characteristics

The source reports 312 observations distributed across three professional-status groups, with an equal gender split. Summed counts in the demographic table equal 312 within each reported characteristic. Nevertheless, the original document does not supply cross-tabulations or weighting, and the relationship between professional status and organizational type remains unclear.

Table 2. Respondent characteristics reported in the original manuscript (N = 312)

Characteristic	Category	n	%
Professional status	Public accountant	98	31.4
	Corporate accountant	127	40.7
	Accounting student	87	27.9
Gender	Male	156	50.0
	Female	156	50.0
Experience	0–5 years	142	45.5
	6–10 years	89	28.5
	>10 years	81	26.0
Education	Bachelor’s	187	59.9
	Master’s	98	31.4
	Doctorate	27	8.7

Note. Values are reproduced from the supplied manuscript. The source does not describe missing values or sample weights.

4.2. Perceived ethical environments across organizational settings

The manuscript reports higher scores for public-company than private-company respondents across three dimensions of the ethical environment (Table 3). These values are descriptive of the reported groups, not evidence that oversight caused the differences. In particular, the number of respondents in each subgroup and the basis for classifying public accountants, corporate accountants, and students into the two company types were not supplied. The t statistics and p values therefore cannot be independently reproduced.

Table 3. Reported ethical-environment scores by company type

Dimension	Public company Mean ± SD	Private company Mean ± SD	t	p
Social norms	4.12 ± 0.78	3.89 ± 0.82	2.34	0.021*
Social practices	3.95 ± 0.85	3.67 ± 0.91	2.67	0.008**
Ethical outcomes	4.08 ± 0.72	3.78 ± 0.88	3.12	0.002**

*Note. *p < .05; **p < .01 (as represented by the reported p values). Subgroup sample sizes and test assumptions are unavailable.*

4.3. Digital competence, ethics, and awareness of independence

Reported bivariate correlations are positive across digital competence, technology readiness, ethical perception, independence awareness, and knowledge of professional ethics. Digital competence correlated with ethical perception at r = 0.34, and the largest reported bivariate association was between professional ethics knowledge and ethical perception (r = 0.62). As correlational outcomes based on self-report, these results do not demonstrate that higher digital competence produces more ethical conduct; reverse association, common-method effects, and unobserved confounding remain plausible.

Table 4. Reported correlation matrix

Construct	1	2	3	4	5
1. Digital competence	1.00				
2. Technology readiness	0.67**	1.00			
3. Ethical perception	0.34**	0.28**	1.00		
4. Independence awareness	0.41**	0.35**	0.58**	1.00	
5. Professional ethics knowledge	0.29**	0.24**	0.62**	0.55**	1.00

*Note. **p < .01, as reported in the submitted manuscript; pairwise sample sizes and confidence intervals are unavailable.*

4.4. Perceived risks in digitally mediated accounting and audit work

The most frequently reported issue was data privacy (78.2%), followed by remote-audit limitations (71.5%) and access to client data (68.9%). Privacy and communication security are chiefly confidentiality or information-security concerns; algorithmic bias bears on evidence quality and professional skepticism. Whether any item also constitutes a threat to independence requires investigation of specific conflicts, relationships, or pressures, rather than an automatic classification. The ratings are the manuscript's reported perceptions, not verified measures of actual breach incidence.

Table 5. Reported digital-ethics and audit-quality risk perceptions

Risk category	Frequency reported (%)	Severity (1–5)
Data privacy concerns	78.2	4.21
Remote audit limitations	71.5	3.89
Algorithmic bias in audit tools	54.3	3.67
Client data access issues	68.9	4.02
Digital communication security	62.4	3.78
Technology dependency	59.8	3.54

Note. Frequency denominators and item-level response distributions were not supplied.

4.5. Predictors of ethical behavior intention

The reported multiple-regression model includes professional ethics knowledge, digital competence, organizational ethical culture, gender, and experience. Professional ethics knowledge has the largest reported coefficient (0.42), followed by organizational ethical culture (0.35); digital competence (0.18) and experience (0.12) are positive, while gender does not reach the conventional 5% significance threshold (p = .231). Because the source labels its coefficients β while also reporting a nonzero intercept, the exact coefficient scaling is ambiguous and is preserved in Table 6 as "reported coefficient." Rankings of effect magnitude require confirmation of standardization and measurement units.

Table 6. Reported multiple-regression summary for ethical behavior intention

Predictor	Reported coef.	SE	t	p
Intercept	1.24	0.31	4.00	<.001
Professional ethics knowledge	0.42	0.08	5.25	<.001**
Digital competence	0.18	0.07	2.57	.011*
Organizational ethical culture	0.35	0.09	3.89	<.001**
Gender	0.06	0.05	1.20	.231
Experience	0.12	0.06	2.00	.047*

*Note. Source reports $R^2 = .48$, adjusted $R^2 = .46$, $F(5, 306) = 56.31$, $p < .001$. *p < .05; **p < .001. These figures have not been recalculated; the reported adjusted R^2 is not fully consistent with N = 312, five predictors, and $R^2 = .48$ (which yield approximately .47).*

4.6. Organizational ethical culture as a reported moderator

The manuscript states that the digital competence × organizational ethical culture interaction was positive (reported coefficient 0.22, p = .003). If reproducible, this would be compatible with a stronger positive competence–intention association where ethical culture is more supportive. However, interaction standard errors, simple slopes, centering decisions, model change in R^2, and confidence intervals were not provided. Figure 1 depicts the hypothesized and reported relationship rather than inferred conditional regression curves.



Figure 1. Reconstructed moderation framework based on coefficients reported in the submitted manuscript.

4.7. Reported structural equation model

The source manuscript also reports an SEM with CFI = .94, RMSEA = .06, and SRMR = .05. Its largest reported structural path links ethical perception to independence maintenance (0.61, $p < .001$); a negative path from characteristics of the digital environment to independence maintenance is also reported (−0.29, $p < .001$). The lack of a measurement-model specification, degrees of freedom, sample covariance matrix, estimator, and full path diagram prevents independent evaluation of model identification, construct distinctiveness, or goodness of fit. Figure 2 is a faithful schematic of the five supplied paths, not an independently estimated output.

Table 7. Reported SEM structural path estimates

Path	Reported standardized coefficient	p
Ethics knowledge → ethical perception	0.52	<.001
Digital competence → ethical perception	0.24	.002
Organizational culture → ethical perception	0.38	<.001
Ethical perception → independence maintenance	0.61	<.001
Digital environment → independence maintenance	−0.29	<.001

Note. Original fit indices: CFI = .94; RMSEA = .06; SRMR = .05. No independent SEM re-estimation was possible.

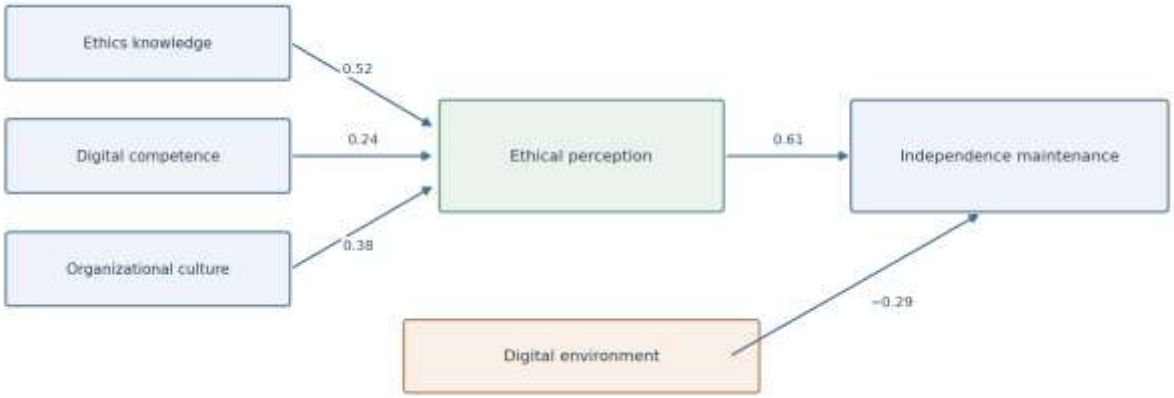


Figure 2. Reconstructed structural paths corresponding to the original manuscript's SEM table.

4.8. Narrative themes retained from the review component

Four themes can be extracted from the manuscript's literature and policy synthesis. First, fundamental ethical principles remain applicable, but require implementation guidance for data access, technological competence, and accountability (Chang et al., 2022) (Nafiisa et al., 2023) (Institut Akuntan Publik Indonesia, 2025). Second, uneven digital literacy may impede informed evaluation of digital audit tools (Mukhlasin et al., 2024) (Isabella et al., 2024). Third, professional preparation should integrate ethics, evidence evaluation, and technology training (Jurana et al., 2023) (Fu & Satrianawati, 2022). Fourth, forensic and technology-supported analysis can strengthen fraud detection while introducing new channels for misuse and cyber risk (Hermawan, 2022) (Fikry et al., 2023). The source does not provide a coded evidence matrix or inter-coder agreement estimates; these themes are therefore interpreted as a narrative synthesis.

5. Discussion

5.1. Theoretical interpretation and proportional inference

Taken together, the reported estimates are consistent with the proposition that ethical knowledge and organizational context matter alongside digital skills. The association between competence and ethical perception ($r = .34$) is weaker than that between ethical knowledge and perception ($r = .62$), suggesting that confidence with digital tools should not be used as a proxy for professional ethical competence. The two estimates are not necessarily statistically distinguishable, since a formal difference test was not provided. The results should therefore be described as patterns of reported association rather than confirmed causal mechanisms.

The interaction coefficient attributed to organizational ethical culture fits the conceptual argument that policies and leadership make it more likely for digitally capable staff to question suspect outputs or escalate concerns. This interpretation aligns with scholarship on ethical climates in accounting (SeTin et al., 2024) and organizational fraud prevention (Wijayani & Ratmono, 2022), but other explanations remain possible, including common-source survey bias and overlapping constructs. A stronger claim of moderation would require conditional effects plotted at observed culture levels, uncertainty intervals, and documented tests of construct validity.

5.2. Independence is not the same as every digital risk

An important conceptual refinement is the distinction between independence, confidentiality, objectivity, and audit quality. A breach of cloud confidentiality may impair trust and violate professional obligations without directly threatening independence. Conversely, a firm that becomes financially or operationally dependent on a client-controlled analytic platform may face a self-interest or intimidation threat if that dependence constrains objective procedures. Remote auditing may affect the sufficiency of evidence without necessarily creating an independence violation. Categorizing these mechanisms accurately helps allocate safeguards according to their legal and professional purpose (International Ethics Standards Board for Accountants, 2025) (Institut Akuntan Publik Indonesia, 2025) (International Auditing and Assurance Standards Board, 2025).

The prevalence of privacy concerns (78.2%) and difficulties associated with remote procedures (71.5%) in the supplied results indicates that respondents perceived operational and ethical challenges as prominent. Such perceptions warrant control attention but should not be read as the frequency of verified independence failures. The reported negative SEM path for digital-environment characteristics could reflect perceived constraints rather than demonstrable misconduct or deficient audit opinions. Future studies should separate objective engagement-level incidents from attitudes measured in surveys.

5.3. Regulatory relevance: interpreting the updated Indonesian code

The manuscript originally described Indonesia's code as requiring substantial revision to cover technology-specific threats. That claim needs updating. The IAPI 2025 code explicitly incorporates technology-related revisions, and the international code's technology provisions were already introduced into the professional ethics framework (Institut Akuntan Publik Indonesia, 2025) (International Ethics Standards Board for Accountants, 2025). The empirically important gap is therefore likely to concern implementation, evidence of compliance, and practical interpretation—not the absence of any applicable professional ethics rules. Firm policies should translate existing principles into procedures for vendor selection, access control, segregation of duties, incident reporting, conflicts screening, and review of automated outputs.

Professional skepticism should be designed into digital workflows. When a model produces an outlier alert or a clean exception report, the auditor should document the information source, validate relevant assumptions, consider contradictory evidence, and retain responsibility for judgments. Training should explain the possibility of automation bias, particularly where user-friendly dashboards conceal model limitations. These actions are consistent with the IAASB emphasis on skepticism and engagement-level quality management (International Auditing and Assurance Standards Board, 2025) (Kamarudin et al., 2022).

5.4. A practical control framework for audit firms

The findings motivate a proportionate control framework in which technological functionality is coupled with specific professional safeguards. Table 8 is a proposed implementation matrix drawn from the argument and the current standards; it is not an empirical result or an evaluated intervention. Implementation should be proportional to firm size, the complexity of engagements, the nature of client data, and the technological arrangements actually used.

Table 8. Proposed digital-ethics control matrix (author synthesis; not a tested intervention)

Risk domain	Recommended safeguard	Review evidence / owner
Cloud privacy and confidentiality	Least-privilege access; encryption; retention controls; vendor due diligence	Access logs and contractual review / firm leadership
Remote audit evidence	Evidence provenance checks; independent confirmation where needed	Working papers and evidence evaluation / engagement partner

Risk domain	Recommended safeguard	Review evidence / owner
Automated or AI-assisted analysis	Model validation, exception review, bias testing, human sign-off	Validation records and overrides / audit methodology team
Independence and third parties	Conflicts register; non-assurance service assessment; financial-interest screening	Independence declarations / ethics partner
Ethical climate and escalation	Protected reporting, case-based learning, and periodic quality reviews	Training records and remediation / quality management team

Note. This matrix distinguishes security, evidence-quality, and independence controls rather than treating all digital risks as the same construct.

5.5. Implications for education, professional bodies, and regulators

Accounting curricula and continuing professional development should combine professional ethical principles with applied case studies in cloud confidentiality, automated evidence evaluation, software-vendor relationships, and data protection. The educational implications complement studies of ethics teaching and accounting students' professional values (Jurana et al., 2023) (Hermawan & Kokthunarina, 2019) (Hermawan et al., 2023). Professional associations can publish interpretive examples showing when a digital practice creates an independence threat and when it instead falls under confidentiality, competence, or quality management. Regulators can prioritize observable safeguards and documentation rather than technology adoption rates alone.

Because students are included alongside practicing accountants, the results should not be generalized exclusively to licensed public auditors. Subsequent research would benefit from separate models for auditors, other accountants, and students; validated ethical-vignette outcomes; objective assessments of competence; firm-level measures of ethical culture; and longitudinal or experimental designs to distinguish temporal ordering and the effects of safeguards.

5.6. Limitations and directions for confirmatory research

The evidence has substantial constraints. First, the underlying dataset, questionnaire, and analytic outputs were unavailable, so no independent replication, validation of sample recruitment, or checking of inferential estimates was possible. Second, purposive, cross-sectional self-report sampling limits external validity and causal interpretation. Third, mixing students with practicing accountants could conflate differences in professional experience and regulatory obligations. Fourth, the public-versus-private comparison lacks group denominators; the regression's adjusted R^2 appears arithmetically inconsistent with its other reported summary statistics; and SEM evaluation lacks the details needed to assess identification and measurement validity. Finally, the qualitative literature review lacks a reproducible search and coding audit trail.

A confirmatory extension should preregister a model distinguishing independence threats from privacy and audit-quality risks, archive de-identified data where permitted, publish the instrument and variable codebook, and report confidence intervals and sensitivity tests. A multilevel design could test whether independently measured organizational culture changes the digital competence–behavior relationship across firms. Experimental ethical vignettes and engagement-level evidence reviews would provide stronger support than self-reported intention alone.

6. Conclusion

The submitted evidence points to a central professional challenge: innovation can increase audit capability, but technical proficiency alone cannot establish ethical judgment or independence. The original manuscript reports positive associations between ethics knowledge, organizational ethical culture, digital competence, and ethical outcomes, while identifying data privacy, remote procedures, and algorithmic bias as salient perceived risks. Those findings are potentially relevant but remain unverified in the absence of the underlying data and full analytic record.

For the Indonesian public accounting profession, the priority is to operationalize the existing and updated ethics framework through risk-specific safeguards, documented professional skepticism, transparent accountability for technology-supported conclusions, and integrated ethical–digital education. Future empirical work should test these mechanisms with defensible construct measurement, transparent sampling, and reproducible analyses. The ultimate objective is to protect public trust while enabling responsible and proportionate technological innovation.

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