

ARTIFICIAL INTELLIGENCE ADOPTION IN ACCOUNTING AND ITS IMPLICATIONS FOR INTERNAL CONTROL QUALITY

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Abstract

Background: Artificial intelligence can strengthen monitoring and consistency while also introducing opaque models, data dependency, automation bias, and new access or accountability risks. **Aim:** The investigation reported here explains how the relationship between the focal practices and internal control quality operates in accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence. **Method:** A conceptual narrative synthesis draws on selected scholarly and institutional publications. The discussion is organized around mechanisms, boundary conditions, and practical implications. **Results:** The synthesis identifies six linked mechanisms: data lineage and validation, human review of material judgments, model governance, segregation of duties, continuous monitoring, incident response and auditability. The study indicates that outcomes depend less on nominal adoption than on operational adoption quality, governance, learning, and fit with local capacity. **Conclusion:** Decision makers should define the expected outcome, assign responsibility, establish a small set of auditable indicators, and revise the intervention when research material contradicts its assumptions. **Contribution:** The assessment provides a conditional framework without claiming primary data that were not collected.

Keywords: artificial intelligence; accounting; internal control; model governance; auditability; automation risk

Introduction

Artificial intelligence can strengthen monitoring and consistency while also introducing opaque models, data dependency, automation bias, and new access or accountability risks. This issue is particularly important for accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence. The central managerial question is not whether the focal practice is fashionable or technically available, but whether it changes information, incentives, coordination, and action in ways that improve internal control quality.

The assessment asks three questions. First, which mechanisms plausibly connect the focal practice with internal control quality? Second, which organizational and institutional conditions strengthen or weaken those mechanisms? Third, which operational adoption and measurement choices allow policy and managerial actors to distinguish genuine capability from surface-level adoption?

Literature Review

Research relevant to artificial intelligence adoption in accounting and its implications for internal control quality crosses strategy, organization, technology, finance, and public-policy perspectives. Vial (2019) describes digital transformation as a process that changes value creation and organizational arrangements, while Teece (2007) emphasizes the capacity to sense change, seize opportunities, and reconfigure resources. Read together, these perspectives shift attention from possession of an input to the capability to use it reliably.

An input may be a platform, infrastructure asset, financial instrument, reporting rule, training program, or relationship. A capability is the repeated ability to combine that input with judgment and coordinated action. In accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence, the distinction is decisive because adoption is observable immediately, while internal control quality often emerges later and may be influenced by several conditions at once.

For accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence, efficiency and resilience create a specific tension. Data lineage and validation may reduce routine friction, yet human review of material judgments determines whether that improvement survives disruption. An intervention that raises average speed while concentrating dependence on one system, person, supplier, or channel can weaken internal control quality. The literature must therefore be read against both normal operations and periods of stress.

Information credibility is especially relevant to model governance and segregation of duties. Participants will not alter behavior merely because information is available; they assess its timeliness, intelligibility, source, and practical relevance. In the present setting, trust is produced through consistent execution and fair exception handling. This helps explain why nominal adoption can coexist with weak internal control quality.

The resulting model places data lineage and validation, model governance, and continuous monitoring on the governance side, while human review of material judgments, segregation of duties, and incident response and auditability describe execution and learning. Their interaction is expected to shape internal control quality; no single mechanism is assumed to have the same effect across every organization, region, or user group.

Research Method

This article uses a purposive conceptual narrative synthesis of the selected publications cited in the references. It develops relationships through analytical interpretation rather than an exhaustive database search or pooled statistical estimation. No systematic screening count, interview sample, administrative dataset, or newly observed causal effect is reported. The framework and proposed indicators are intended for subsequent testing in the specified setting.

The analysis separates the focal outcome, the mechanisms that may connect actions to that outcome, the conditions that could weaken those mechanisms, and the observations needed to test the resulting propositions. These categories organize the discussion; they are not a report of independently validated coding or a quantitative evidence synthesis. Illustrative decision rules and measurement proposals should therefore be read as conceptual contributions.

Analytical theme	Central question	Operational evidence
Data lineage and validation	How does data lineage and validation influence internal control quality?	Ownership, routine, exception records, user behavior, and outcome indicators related to data lineage and validation.
Human review of material judgments	How does human review of material judgments influence internal control quality?	Ownership, routine, exception records, user behavior, and outcome indicators related to human review of material judgments.
Model governance	How does model governance influence internal control quality?	Ownership, routine, exception records, user behavior, and outcome indicators related to model governance.
Segregation of duties	How does segregation of duties influence internal control quality?	Ownership, routine, exception records, user behavior, and outcome indicators related to segregation of duties.
Continuous monitoring	How does continuous monitoring influence internal control quality?	Ownership, routine, exception records, user behavior, and outcome indicators related to continuous monitoring.
Incident response and auditability	How does incident response and auditability influence internal control quality?	Ownership, routine, exception records, user behavior, and outcome indicators related to incident response and auditability.

The principal limitation is that the assessment does not necessarily use original interviews, surveys, experiments, or administrative microdata. Its results are therefore propositions supported by synthesis instead of estimates of effect size. The named authors should verify the interpretation, references, affiliations, and practical relevance before submission.

Results and Discussion

Data lineage and validation

For the focal institutions, data lineage and validation becomes material when it alters who receives information, who acts, and how quickly an exception is resolved. Its effect is conditional on skills, authority, incentives, and the credibility of the supporting information. Artificial intelligence can strengthen monitoring and consistency while also introducing opaque models, data dependency, automation bias, and new access or accountability risks. For this topic, data lineage and validation has to be examined together with human review of material judgments, because both shape internal control quality in accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence. A bounded pilot, named owner, documented exception log, and explicit review threshold provide a defensible operational adoption path.

A useful test of data lineage and validation is whether participants can apply it consistently when operating conditions depart from plan. Variation in size, governance, infrastructure, and exposure means that identical adoption levels need not produce identical results. Artificial intelligence can strengthen monitoring and consistency while also introducing

opaque models, data dependency, automation bias, and new access or accountability risks. For this topic, data lineage and validation has to be examined together with model governance, because both shape internal control quality in accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence. This interpretation favors transparent learning over a one-time declaration that the initiative has succeeded.

Analysis of data lineage and validation begins with a practical distinction between formal availability and dependable use in everyday work. The mechanism can fail when ownership is diffuse, feedback is delayed, or users cannot challenge an implausible output. Artificial intelligence can strengthen monitoring and consistency while also introducing opaque models, data dependency, automation bias, and new access or accountability risks. For this topic, data lineage and validation has to be examined together with segregation of duties, because both shape internal control quality in accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence. A bounded pilot, named owner, documented exception log, and explicit review threshold provide a defensible operational adoption path.

Human review of material judgments

A useful test of human review of material judgments is whether participants can apply it consistently when operating conditions depart from plan. Local constraints shape both the feasible design and the pace at which the practice may be expanded. Artificial intelligence can strengthen monitoring and consistency while also introducing opaque models, data dependency, automation bias, and new access or accountability risks. For this topic, human review of material judgments has to be examined together with model governance, because both shape internal control quality in accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence. The appropriate response is to test assumptions locally, preserve reversibility, and expand only after the operating mechanism is demonstrated.

Analysis of human review of material judgments begins with a practical distinction between formal availability and dependable use in everyday work. Operational reliability turns on how the practice is connected to adjacent workflows and existing accountabilities. Artificial intelligence can strengthen monitoring and consistency while also introducing opaque models, data dependency, automation bias, and new access or accountability risks. For this topic, human review of material judgments has to be examined together with segregation of duties, because both shape internal control quality in accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence. Managers consequently need to compare activity records with research material of reliability, user response, and consequences for internal control quality.

For the focal institutions, human review of material judgments becomes material when it alters who receives information, who acts, and how quickly an exception is resolved. Within accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence, responsibility, usable records, and exception routines determine whether the mechanism functions. Artificial intelligence can strengthen monitoring and consistency while also introducing opaque models, data dependency, automation bias, and new access or accountability risks. For this topic, human review of material judgments has to be examined together with continuous monitoring, because both shape internal control quality in accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence. The appropriate response is to test assumptions locally, preserve

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Discussion by Analytical Theme

Model governance

Analysis of model governance begins with a practical distinction between formal availability and dependable use in everyday work. Its effect is conditional on skills, authority, incentives, and the credibility of the supporting information. Artificial intelligence can strengthen monitoring and consistency while also introducing opaque models, data dependency, automation bias, and new access or accountability risks. For this topic, model governance must be examined together with segregation of duties, because both shape internal control quality in accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence. Kraus et al. (2022) and Teece (2007) indicate that capability must be observed through repeated performance, not inferred from expenditure or installation.

For the focal institutions, model governance becomes material when it alters who receives information, who acts, and how quickly an exception is resolved. Variation in size, governance, infrastructure, and exposure means that identical adoption levels need not produce identical results. Artificial intelligence can strengthen monitoring and consistency while also introducing opaque models, data dependency, automation bias, and new access or accountability risks. For this topic, model governance has to be examined together with continuous monitoring, because both shape internal control quality in accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence. Evaluation should combine a leading indicator for model governance with a lagging measure of internal control quality.

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Segregation of duties

For the focal institutions, segregation of duties becomes material when it alters who receives information, who acts, and how quickly an exception is resolved. Local constraints shape both the feasible design and the pace at which the practice may be expanded. Artificial intelligence can strengthen monitoring and consistency while also introducing opaque models, data dependency, automation bias, and new access or accountability risks. For this topic, segregation of duties has to be examined together with continuous monitoring, because both shape internal control quality in accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence. A bounded pilot, named owner, documented exception log, and explicit review threshold provide a defensible operational adoption path.

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Discussion by Analytical Theme

Continuous monitoring

A useful test of continuous monitoring is whether participants can apply it consistently when operating conditions depart from plan. Its effect is conditional on skills, authority, incentives, and the credibility of the supporting information. Artificial intelligence can strengthen monitoring and consistency while also introducing opaque models, data dependency, automation bias, and new access or accountability risks. For this topic, continuous monitoring has to be examined together with incident response and auditability, because both shape internal control quality in accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence. The appropriate response is to test assumptions locally, preserve reversibility, and expand only after the operating mechanism is demonstrated.

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human review of material judgments, because both shape internal control quality in accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence. The appropriate response is to test assumptions locally, preserve reversibility, and expand only after the operating mechanism is demonstrated.

Incident response and auditability

Analysis of incident response and auditability begins with a practical distinction between formal availability and dependable use in everyday work. Local constraints shape both the feasible design and the pace at which the practice can be expanded. Artificial intelligence can strengthen monitoring and consistency while also introducing opaque models, data dependency, automation bias, and new access or accountability risks. For this topic, incident response and auditability must be examined together with data lineage and validation, because both shape internal control quality in accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence. OECD (2023) and World Bank (2022) indicate that capability must be observed through repeated performance, not inferred from expenditure or installation.

For the focal institutions, incident response and auditability becomes material when it alters who receives information, who acts, and how quickly an exception is resolved. Operational reliability turns on how the practice is connected to adjacent workflows and existing accountabilities. Artificial intelligence can strengthen monitoring and consistency while also introducing opaque models, data dependency, automation bias, and new access or accountability risks. For this topic, incident response and auditability has to be examined together with human review of material judgments, because both shape internal control quality in accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence. Evaluation should combine a leading indicator for incident response and auditability with a lagging measure of internal control quality.

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Integrated Mechanism Framework

The six mechanisms form a connected operating system for accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence, not a checklist. Weakness in data lineage and validation can restrict human review of material judgments, while poor continuous monitoring may prevent lessons from reaching incident response and auditability. For internal control quality, the value of one mechanism therefore turns on whether neighboring routines supply credible information, authority, and feedback.

The first pathway connects information to judgment. Data lineage and validation and human review of material judgments improve visibility, but decision quality also requires interpretation and an agreed response. The second pathway connects organization to execution through model governance and segregation of duties. The third pathway connects accountability to adaptation through continuous monitoring and incident response and auditability.

The analytical model predicts that internal control quality will be strongest when all three pathways reach a minimum viable level. Excellence in a single component cannot fully compensate for basic weakness elsewhere. This complementarity explains why institutions may invest substantially yet observe limited results: resources are allocated to the visible technology or program while less visible routines, responsibilities, and feedback processes remain unchanged.

Sequence matters for artificial intelligence adoption in accounting and its implications for internal control quality. A credible operational adoption starts with the concrete problem: Artificial intelligence can strengthen monitoring and consistency while also introducing opaque models, data dependency, automation bias, and new access or accountability risks. It then documents the current process, assigns ownership for data lineage and validation, pilots changes affecting human review of material judgments, and records exceptions before wider adoption. Research material from the pilot should determine whether expansion is justified.

Governance in this framework protects the purpose of improving internal control quality. It specifies authority for model governance, acceptable risk around segregation of duties, documentation for continuous monitoring, and escalation when incident response and auditability reveals failure. Proportionate controls make adaptation safer without turning every local decision into a centralized approval.

Managerial and Policy Implications

Decision makers should translate the objective of improving internal control quality into a small measurement architecture. Leading indicators capture whether the mechanism is operating; lagging indicators capture whether the intended outcome follows. Both are needed because an early increase in activity may reflect operational adoption effort instead of sustainable value.

Priority	Owner	Leading indicator	Review question
Data lineage and validation	Named process owner	Completion and exception evidence for data lineage and validation	Is data lineage and validation changing decisions or only activity?
Human review of material judgments	Named process owner	Completion and exception evidence for human review of material judgments	Is human review of material judgments changing decisions or only activity?
Model governance	Named process owner	Completion and exception evidence for model governance	Is model governance changing decisions or only activity?
Segregation of duties	Named process owner	Completion and exception evidence for segregation of duties	Is segregation of duties changing decisions or only activity?

Priority	Owner	Leading indicator	Review question
Continuous monitoring	Named process owner	Completion and exception evidence for continuous monitoring	Is continuous monitoring changing decisions or only activity?
Incident response and auditability	Named process owner	Completion and exception evidence for incident response and auditability	Is incident response and auditability changing decisions or only activity?

For managers, the immediate task is to establish a baseline, choose one bounded operational adoption unit, and review research material at a frequency matched to the decision cycle. For policy makers and industry bodies, the priority is to reduce avoidable coordination costs, improve access to reliable guidance, and support capability development instead of measuring success only by enrollment, installation, or nominal adoption.

Future research on artificial intelligence adoption in accounting and its implications for internal control quality should define populations and measures explicitly. Longitudinal observation is needed to determine whether incident response and auditability produces durable learning or only a temporary response. Mixed methods could connect changes in internal control quality to the routines through which data lineage and validation and segregation of duties are enacted.

Limitations and Future Research

Three limitations qualify the synthesis. Research material concerning accounting functions adopting machine learning, document extraction, anomaly detection, forecasting, and generative artificial intelligence is heterogeneous and cannot establish one effect size for internal control quality. Institutional sources clarify context but cannot replace unit-level causal research material. In addition, the selected mechanisms may omit practices visible only through fieldwork, particularly where model governance or continuous monitoring is informal. The propositions consequently need to guide inquiry instead of be treated as universal estimates.

Future research should operationalize internal control quality with measures that distinguish activity, capability, and outcome. Comparative studies can examine whether organization size, ownership, regulatory exposure, location, or digital maturity changes the strength of the proposed relationships. Longitudinal observation is needed to separate temporary operational adoption disruption from durable improvement.

Conclusion

The investigation reported here examined artificial intelligence adoption in accounting and its implications for internal control quality through a conceptual narrative synthesis. The synthesis shows that internal control quality does not necessarily arise automatically from formal adoption or expenditure. It turns on the interaction of data lineage and validation, human review of material judgments, model governance, segregation of duties, continuous monitoring, incident response and auditability.

The central conclusion is conditional. Artificial intelligence can strengthen monitoring and consistency while also introducing opaque models, data dependency, automation bias, and new access or accountability risks. Institutions consequently need to define the decision problem, build proportionate governance, test operational adoption in stages, and combine leading indicators with outcome research material. This approach treats

uncertainty as something to manage through learning instead of conceal through overly precise claims.

The analytical model contributes a practical bridge between broad research findings and local decisions. It does not necessarily replace author judgment, peer review, or empirical validation. Its value lies in making mechanisms and assumptions explicit so that managers, policy makers, and researchers can examine where an intervention is likely to work, where it may fail, and what research material should trigger revision.

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