



The Impact of Artificial Intelligence on Accounting Practices

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Abstract – Artificial intelligence (AI) is reshaping accounting by automating routine work, elevating analytical depth, and redefining assurance and control. Drawing on developments in machine learning (ML), natural language processing (NLP), generative AI (GenAI), and robotic process automation (RPA), this paper synthesizes the current state of AI adoption across subdomains (payables, receivables, general ledger, FP&A, tax, and audit), proposes an architecture for AI-enabled controls and assurance, and presents implementation guidance, risk controls, and outcome metrics. We argue that value accrues from combinations of (1) reliable data pipelines; (2) task- and domain-specific models; (3) policy-aware automation; and (4) human-in-the-loop governance. We conclude with a staged roadmap and research agenda.

Keywords – accounting automation, machine learning, generative AI, internal controls, continuous audit, anomaly detection, model risk management.

I. INTRODUCTION

Accounting functions have long balanced timeliness, accuracy, compliance, and cost. AI breaks traditional trade-offs: e.g., automated three-way matching simultaneously increases throughput and exception accuracy; large-language-model (LLM) assistants draft narratives, reconcile outliers, and surface risks from unstructured evidence (emails, contracts, workpapers). Beyond efficiency, AI alters where expertise is applied—shifting effort from mechanical data handling to interpreting signals and controlling risk.

Figure 1 summarizes the relative automation potential across accounting subdomains (illustrative percentages).

Figure 2 visualizes a common outcome metric: reduction in “days to close” as AI maturity increases.

Figure 3 proposes an AI-enabled controls and assurance architecture aligned to data, automation, and oversight layers.

II. LITERATURE & PRACTICE REVIEW

Research and practitioner surveys consistently find:

- High automation potential in transaction processing. AP/AR and bank reconciliation show the largest near-term gains due to structured inputs and repetitive decision rules.
- Augmentation over full autonomy. Auditing, tax planning, and FP&A benefit most from decision support—scenario generation, variance explanation, and risk triage—rather than end-to-end automation.
- Data quality as primary constraint. Master-data governance, invoice normalization, and bank feed integrity dominate implementation effort and risk.
- Controls-first adoption. Continuous controls monitoring (CCM) and explainable anomaly detection build confidence and regulator readiness.
- Model risk management (MRM) is essential. Bias, drift, hallucination, and adversarial inputs require explicit policies, testing, and documentation.

III. TECHNOLOGY LANDSCAPE

1. Perception & Parsing: OCR, document layout analysis, and invoice/receipt understanding convert semi-structured documents to standardized records with confidence scores.
2. Prediction: ML classifies and forecasts (e.g., cash collections likelihood, expense misclassification, revenue leakage risk).
3. Generation: LLMs draft memos, vendor correspondence, audit workpaper narratives, and policy-compliant journal descriptions.
4. Action: RPA and workflow engines post entries, route exceptions, and trigger approvals under policy constraints.
5. Assurance: Anomaly detection, rules engines, and statistical tests provide detective and preventive controls, with explainability artifacts for internal/external audit.

IV. USE CASES BY SUBDOMAIN

Accounts Payable (AP)

- **Document AI:** Invoice capture, line-item extraction, PO/GRN matching with model-based tolerance bands.
- **Duplicate & Fraud Prevention:** Graph and embedding models detect vendor duplication, split-invoice patterns, or atypical bank accounts.
- **Policy-Aware Approvals:** LLMs evaluate free-text justifications against policy; exceptions routed with evidence packets.

Accounts Receivable (AR)

- **Cash Application:** Multi-signal matching across remittances, portals, and bank feeds.
- **Collections Prioritization:** Propensity-to-pay scoring and dynamic dunning scripts generated by GenAI, tone-controlled and logged.



General Ledger & Close

- **Auto-coding & Narrative Drafting:** LLMs suggest GL accounts and generate explainable narratives for unusual journals.
- **Intercompany & Blackline-style Reconciliations:** ML flags out-of-pattern timing/amount mismatches; bots prepare reconciliations with evidence links.
- **Close Orchestration:** Predictive alerts on late tasks; “what-if” capacity rebalancing. Outcome: Figure 2 highlights typical reductions in close duration as maturity increases.

FP&A

- **Scenario Generation:** Generative models produce multi-scenario P&L/B/S/CFS with driver sensitivities.
- **Variance Attribution:** SHAP-style explanations connect forecast deltas to drivers (price/volume/mix, OPEX buckets).
- **Natural-Language BI:** Analysts query models in plain language for cohort or margin insights; generated insights include source lineage.

Tax

- **Nexus & Classification:** Rules+ML for product/service taxability; entity-resolution for supplier/customer nexus.
- **Workpaper Automation:** Extract-transform-load to provision schedules; GenAI drafts footnotes and ties-out to GL with traceable citations.
- **Risk Monitoring:** Continuous monitoring of effective tax rate drivers and uncertain tax positions.

Audit & Assurance

- **Continuous Auditing:** Population-level testing replaces sampling on many controls; exceptions triaged with ranked root causes.
- **Evidence Summarization:** LLMs assemble explainable narratives with links to underlying evidence; assists but does not replace auditor judgment.
- **Independence & Security Controls:** Segregated environments; immutable logs; algorithmic accountability memos.

V. ARCHITECTURE FOR AI-ENABLED CONTROLS & ASSURANCE

Figure 3 depicts three horizontal layers:

1. **Data Foundation:** ERP/CRM/bank/EDI sources flow into a governed lakehouse with ELT/CDC pipelines; master data stewardship and quality scoring are first-class.
2. **AI Services:** Task-specific models (classification, matching, forecasting) and GenAI services accessed behind policy enforcers; prompts, parameters, and outputs are stored immutably for auditability.
3. **Automation & Assurance:** RPA/workflow implements approved actions; CCM monitors key control indicators; continuous audit tools generate explainable exceptions and workpapers.

Design principles: least-privilege access; human-in-the-loop for materiality thresholds; deterministic fallbacks; red-teaming for adversarial inputs; and cryptographic content provenance for GenAI outputs.

VI. GOVERNANCE, RISK, AND COMPLIANCE (GRC)

Model Risk Management (MRM)

- **Inventory & Taxonomy:** Register each model (purpose, owner, data, interfaces).
- **Validation:** Pre-go-live and periodic tests for accuracy, stability, drift, fairness; benchmark against rules-based baselines.
- **Controls:** Input filters, output confidence thresholds, dual-control for postings, rollback plans, and prompt/content logging.
- **Documentation:** Plain-language model cards and audit-ready workpapers.

Data Governance

- **Lineage & Provenance:** End-to-end lineage from document ingest to GL posting; hash-based fingerprinting for documents.
- **Privacy & Secrecy:** PII minimization, tokenization, and confidential computing for sensitive data.
- **Retention:** Policy-aligned retention for prompts, outputs, and intermediate features.

Ethics & Workforce

- **Augmentation Commitment:** Policies that AI assists, not replaces licensed judgment; training on limitations, bias, and appropriate reliance.
- **Transparency:** Disclose AI use to auditors, regulators, and counterparties as appropriate.

VII. IMPLEMENTATION ROADMAP

- **Stage 0:** Readiness (4–6 weeks)
Assess data quality, control maturity, and pain points; define success metrics (e.g., % touchless invoices, exception false-positive rate, close days).
- **Stage 1:** Foundation (1–2 quarters)
Stand up secure data pipelines; deploy AP capture/matching and cash application; implement CCM for key controls.
- **Stage 2:** Augmentation (1–2 quarters)
Introduce LLM assistants for narratives, policy checks, and collections outreach; expand anomaly detection and variance explanation.

Stage 3: Orchestration (ongoing)

Autonomize low-risk actions with policy guards; embed A/B testing of models; expand continuous audit and self-service analytics.
Change management: role-based training, “two-person integrity” for material postings, and a living control library with AI usage notes.



VIII. METRICS & ECONOMICS

- **Efficiency:** Days to close (Fig. 2), cycle time per invoice, % straight-through processing, cost per transaction.
- **Quality:** Exception precision/recall, restatement rate, audit findings, tolerance-band adherence.
- **Control Health:** Number of key control indicators with automated coverage, mean time to detect/respond.
- **Finance Impact:** Working-capital improvements (DSO/DPO), forecast accuracy, leakage avoided.
- **Adoption:** Active assistant sessions, human rework rate, user-satisfaction scores.

IX. SMALL & MID-SIZE ENTERPRISES (SME) CONSIDERATIONS

- Prefer platform-native AI features in cloud ERPs to reduce integration overhead.
- Use pretrained document understanding and matching before custom models.
- Adopt managed services for MRM and logging to meet auditor expectations without heavy headcount.

X. LIMITATIONS AND RISKS

- Generalization gaps when models face new vendors, chart-of-accounts changes, or policy revisions.
- Hallucinations from LLMs if prompts lack guardrails or retrieval grounding.
- Automation brittleness when upstream schemas or UI layouts change.
- Regulatory uncertainty on AI disclosures in audit/tax jurisdictions—maintain conservative governance and clear auditor dialogue.

XI. FUTURE DIRECTIONS

- Agentic workflows that negotiate approvals, schedule close tasks, and coordinate bots under policy constraints.
- Causal inference to attribute drivers of margin or cash movements.
- Federated & privacy-preserving learning across subsidiaries and partners.
- Secure content provenance (signing, watermarking) for generated narratives and evidence packets.

XII. CONCLUSION

AI in accounting is not a single tool but a layered capability: trustworthy data, task-specific models, policy-aware automation, and rigorous assurance. Organizations that invest in governance and human-centered design realize faster period closes, higher control coverage, and deeper insight—without compromising professional judgment.

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