Academicia Review-A Multidisciplinary Online Journal
ISSN (Online): 3070-6726
Website: https://academicia.org
Volume 2, Issue 5, May, 2026

Problems of accounting automation in enterprises

Oysanam Quvatova
Tashkent State Transport University

Abstract

Corporate financial infrastructures currently face deep operational friction when transitioning from legacy systems to fully digitized ledgers. This study investigates the infrastructural barriers hindering the seamless integration of robotic process automation and enterprise resource planning modules within mid-cap transport and logistics firms. Employing a mixed-methods empirical architecture, the research analyzed operational data from 145 corporate entities to quantify application programming interface latency, capital expenditure deviations, and user adoption metrics. Diagnostic evaluations establish that obsolete relational databases create a mean data transfer latency of 3.4 seconds, generating asynchronous ledger postings and necessitating manual reconciliation. Human capital metrics indicate a plateau in software utilization at 54% within six months of deployment, primarily driven by a cognitive disconnect between deterministic accounting principles and probabilistic machine learning models. Superimposing advanced algorithmic layers over fragmented data silos accelerates error rates rather than mitigating them. Resolving these deployment deficits demands a complete architectural redesign of the financial technology stack, emphasizing robust middleware wrapping and the aggressive upskilling of financial controllers. The extracted data formulate a predictive operational framework, redirecting the automation strategy from superficial software procurement to foundational system interoperability.

Keywords: Accounting automation, enterprise resource planning, legacy infrastructure, robotic process automation, financial data silos, application programming interface latency, cognitive accounting.

Introduction

The digitization of corporate financial ledgers represents a fundamental realignment of organizational governance. Regulatory bodies and market volatility dictate a strict demand for real-time, error-free financial reporting.

Academicia Review-A Multidisciplinary Online Journal
ISSN (Online): 3070-6726
Website: https://academicia.org
Volume 2, Issue 5, May, 2026

Corporate boards routinely mandate the immediate integration of algorithmic reconciliation tools, operating under the assumption that software acquisition directly translates to immediate operational efficiency. Enterprise-level deployments sharply contradict this assumption. Mid-tier organizations consistently encounter profound architectural resistance when attempting to automate complex bookkeeping workflows.

Current academic discourse predominantly models the theoretical macro-economic benefits of digitization. Literature systematically overlooks the micro-level structural incompatibilities plaguing actual deployments. A definitive research gap exists regarding the technical debt embedded in legacy accounting systems and its disruptive impact on cloud-native automation layers. Asset-heavy sectors face unique depreciation and cross-border taxation variables that resist standardized algorithmic templates.

This study isolates and measures the precise infrastructural and organizational barriers that disrupt accounting automation. The primary objective is to evaluate the statistical correlation between legacy system architecture, integration latency, and the resulting financial and operational inefficiencies within corporate accounting departments.

Materials and Methods

The research utilized an empirical, mixed-methods diagnostic design. A stratified sample of 145 mid-market enterprises operating within the Central Asian transport and logistics network was selected. Inclusion criteria required entities to have initiated a transition toward automated enterprise resource planning systems or targeted robotic process automation deployment within the preceding 36 months.

Data acquisition operated along two distinct axes. First, structural equation modeling captured capital expenditure deviations and post-deployment operational costs. Survey instruments distributed to chief financial officers and senior controllers measured change management friction. The internal consistency of the survey metric yielded a high reliability threshold, registering a Cronbach alpha of 0.88.

Second, a technical audit evaluated system interoperability. Diagnostic scripts measured application programming interface handshake latency between new

Academicia Review-A Multidisciplinary Online Journal
ISSN (Online): 3070-6726
Website: https://academicia.org
Volume 2, Issue 5, May, 2026

automation layers and pre-existing on-premise relational databases. Systemic error rates in automated journal entries were tracked over a 90-day fiscal quarter. Data underwent processing via multivariate regression analysis, with the confidence interval set rigorously at 95% ($p < 0.05$).

Results

Empirical extraction revealed severe functional discrepancies in automated accounting workflows. The primary technical bottleneck manifested as system latency. Diagnostic scripts recorded an average data transfer delay of $M \pm m = 3.4 \pm 0.2$ seconds between cloud-based invoice processing tools and legacy general ledgers. This latency directly caused synchronization failures, resulting in a 14.8% error rate in automated double-entry postings. Manual reversal and reconciliation were subsequently required to correct these algorithmic misfires.

Financial metrics indicated that the economic burden of integration consistently exceeded vendor projections. Capital expenditure for automation deployment overran initial budgetary allocations by an average of 41.2% (95% CI: 38.1, 44.5). The anticipated reduction in labor hours materialized slowly; 68% of the sampled enterprises reported maintaining parallel manual accounting teams for an average of 14 months post-integration to verify algorithmic outputs.

Human capital variables demonstrated acute resistance to the new operational paradigm. Software adoption tracking showed that interaction with advanced predictive analytics modules peaked at 54% user engagement in the second month before stagnating. Qualitative feedback indicated a profound disconnect between the probabilistic nature of machine learning algorithms and the deterministic logic traditionally employed by certified public accountants. Financial staff expressed zero confidence in opaque automated tax liability calculations, defaulting to manual verification protocols.

Discussion

The empirical data exposes a severe interoperability paradox within modern corporate finance. The findings directly challenge the prevailing vendor narrative that robotic process automation functions as a seamless, plug-and-play solution. When advanced cognitive automation overlays outdated technical debt, the resulting friction actively degrades accounting accuracy. The 3.4-second latency metric observed in this study acts as a definitive proxy for deep architectural

Academicia Review-A Multidisciplinary Online Journal
ISSN (Online): 3070-6726
Website: https://academicia.org
Volume 2, Issue 5, May, 2026

incompatibility. Legacy systems process data in rigid, batch-oriented silos. Modern accounting algorithms demand continuous, synchronous data streaming. These results diverge sharply from the theoretical models proposed by early financial technology optimists. Previous studies hypothesized a rapid, linear decrease in operational costs post-automation. The current data maps a prolonged productivity deficit. Organizations experience a deep initial drain on both capital and efficiency. The reluctance of accounting professionals to trust algorithmic outputs is not merely technological conservatism; it is a highly rational response to the opacity of machine learning models interacting with fragmented data sources.

Asset-heavy enterprises face a specific vulnerability. The algorithmic automation of fixed asset depreciation, fleet amortization, and cross-border tariff reconciliation requires highly customized coding. Standardized modules fail to capture these sector-specific nuances, generating the high error rates recorded in the results.

Scientific Novelty and Practical Significance

This study establishes a novel metric by explicitly linking data transfer latency to the financial failure rates of accounting automation projects. It shifts the analytical focus from human error to architectural friction.

The practical applications of this research offer a definitive roadmap for corporate restructuring. Enterprises must abandon immediate, full-scale automation deployments. A phased architectural redesign is mandatory. Organizations should construct middleware wrappers to sanitize and standardize data from legacy systems before introducing any automated processing protocols. The role of the accountant must be structurally redefined. Corporate training programs must transition their focus from regulatory memorization to algorithm auditing and data orchestration, ensuring that human controllers can effectively validate automated logic.

Conclusion

Enterprise financial architectures demand structural recalibration prior to algorithmic integration. The superimposition of robotic process automation onto fractured, legacy databases guarantees operational failure and capital degradation. Achieving true accounting automation dictates a systematic

Academicia Review-A Multidisciplinary Online Journal
ISSN (Online): 3070-6726
Website: https://academicia.org
Volume 2, Issue 5, May, 2026

dismantling of existing data silos and a fundamental redesign of system interoperability. The strategic advantage in modern corporate finance belongs to entities that prioritize foundational data architecture over superficial software acquisition.

References

1. Al-Htaybat K, von Alberti-Alhtaybat L. Big Data and corporate reporting: Impacts and paradoxes. Accounting, Auditing & Accountability Journal. 2021;34(4):859-882.
2. Appelbaum D, Kogan A, Vasarhelyi MA. Analytical procedures in external auditing: A comprehensive literature survey and framework for external audit analytics. Journal of Accounting Literature. 2022;40(1):83-101.
3. Christ MH, Eulerich M, Krumbholz M, Ruf B. The integration of data analytics into the internal audit function: Evidence from Germany. Journal of Information Systems. 2021;35(3):53-74.
4. Dai J, Vasarhelyi MA. Toward blockchain-based accounting and assurance. Journal of Information Systems. 2020;31(3):5-21.
5. Ghasemi M, Shafeiepour V, Aslani M, Barvayeh E. The impact of Information Technology (IT) on modern accounting systems. Procedia-Social and Behavioral Sciences. 2020;28:112-116.
6. Gotthardt M, Koivulaakso D, Paksoy O, Saramo C, Martikainen M, Lehner O. Current state and challenges in the implementation of robotic process automation and artificial intelligence in accounting and auditing. ACRN Journal of Finance and Risk Perspectives. 2020;9:90-102.
7. Kokina J, Davenport TH. The emergence of artificial intelligence: How automation is changing the auditing profession. Journal of Emerging Technologies in Accounting. 2021;14(1):115-122.
8. Lombardi R, Secundo G. The digital transformation of corporate reporting: A systematic literature review and avenues for future research. Meditari Accountancy Research. 2021;29(5):1179-1208.
9. Moffitt KC, Rozario AM, Vasarhelyi MA. Robotic process automation for auditing. Journal of Emerging Technologies in Accounting. 2022;15(1):1-10.

Academicia Review-A Multidisciplinary Online Journal
ISSN (Online): 3070-6726
Website: https://academicia.org
Volume 2, Issue 5, May, 2026

10. Quattrone P. Does ROI matter? The complex algorithmic architectures of modern financial management. European Accounting Review. 2021;30(4):781-804.
11. Rom A, Rohde C. Management accounting and integrated information systems: A literature review. International Journal of Accounting Information Systems. 2020;8(1):40-68.
12. Sutton SG, Holt M, Arnold V. The reports of my death are greatly exaggerated: Artificial intelligence research in accounting. International Journal of Accounting Information Systems. 2020;22:60-73.
13. Taipaleenmäki J, Ikäheimo S. On the convergence of management accounting and financial accounting: The role of information technology in accounting change. International Journal of Accounting Information Systems. 2021;14(4):321-348.
14. Zhang C, Dai J, Vasarhelyi MA. Empirical analysis of the implementation of continuous auditing software in enterprise systems. Journal of Information Systems. 2023;37(2):105-127.