

Can AI and Blockchain Make Financial Reporting Better? A Three-Month Test at an Online StoreAuthor: **Charbel Attieh¹***Affiliation:*

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Abstract:

I wanted to know if using AI to spot weird transactions plus a private blockchain could make financial reporting faster, more accurate, better at catching fraud, and cheaper than doing it all by hand. I ran a test at a mid-sized online store for three months. One system was the old manual way. The other used AI and blockchain together. I looked at about 11,000 transactions. The new system won on every measure. Closing the books went from 7 days to 3 days. Mistakes dropped from 5.0% to 1.4%. Audit hours fell from 150 to 80. Fraud detection went from 60% to 89%. And monthly costs dropped from \$22,000 to \$14,000. The study has limits: it is just one company, it does not include setup costs, and it does not use advanced statistics. More research is needed in other industries and on how regulators should handle these new tools.

Keywords:

Artificial Intelligence, Blockchain, Financial Reporting, Fraud Detection, Continuous Auditing, Accounting Automation, Internal Controls, Corporate Governance

Introduction:

Financial reporting has worked the same way for decades. Companies close the books on a schedule, match accounts by hand, and audit after everything already happened. That system made sense when business was slower and simpler. But today business moves fast. Online shopping creates way more transactions. Rules are stricter. And when reporting is late or wrong, the damage is much bigger.

AI and blockchain are each supposed to fix these problems. AI can catch strange transactions right away and sort data more consistently. Blockchain keeps a permanent record that cannot be changed, so auditors do not have to rebuild history from scratch. But most research looks at these two tools separately or only talks about them in theory. Nobody has built and tested a real system that uses both at the same time. That is what I did.

My main question: Does AI plus blockchain make financial reporting faster, more accurate, better at catching fraud, and cheaper to audit than doing it by hand?

Smaller questions:

1. Which system closes the books faster?
2. Which system makes fewer mistakes?
3. Which system catches fraud better as it happens?
4. Does blockchain cut audit hours?
5. What does it cost to switch?
6. How does it affect governance and accounting rules?

Literature Review:

Financial reporting has always been done on a fixed schedule, mostly by hand, and focused on the past. People type in journal entries. Bank accounts are matched only at month-end. Internal audit checks just a small sample every three months. This creates three problems: it is slow, people make mistakes, and it leaves room for fraud. Big scandals like Enron, WorldCom, and Wirecard showed that manual controls can be dodged, delayed, or missed. After Sarbanes-Oxley, rules got tougher on paper, but the main control still depended on people using their judgment.

Early AI fraud detection used simple rules, like "flag anything over \$10,000." That was better than nothing but easy to get around. Modern AI uses something called unsupervised anomaly detection. That means the AI learns what normal looks like and flags anything weird, without needing examples of fraud first. It can also adapt to new tricks. Some newer models hit over 93% accuracy and catch over 95% of actual fraud. KPMG found in 2026 that 76% of organizations use some AI in finance, often for fraud detection. But bad data is still a big problem. 42% say data quality is the main thing stopping them from using AI more.

When blockchain first showed up in accounting, people went overboard with hype. Now research has settled down. Blockchain is a ledger that makes tampering obvious and only lets you add new entries. It creates a record that does not depend on the company being audited to provide it. This changes how audits work. Auditors do not have to collect evidence themselves. They can analyze evidence that is already permanent. There are four main uses: automated auditing, fraud prevention, secure data, and real-time reporting. Banks and supply chains that tested it report lower costs and more confidence. Newer research pairs blockchain with federated AI—AI that learns across companies without sharing raw data—for following rules in different countries. But there is still a "garbage in, garbage out" problem. Blockchain makes sure records cannot be changed. It does not make sure they are correct in the first place.

This study uses agency theory from Jensen and Meckling (1976). The basic problem is that shareholders and managers do not have the same information. Managers always know more. Financial reports are supposed to close that gap, but only if they are reliable. Blockchain and smart contracts help because they cut information asymmetry and automatically enforce agreements. When it is hard to change records after the fact, cheating becomes more costly. This is a technology fix for a governance problem that used to be handled through monitoring and incentives.

The real question is not whether AI or blockchain helps on its own. It is what happens when they work together in one system. Most research looks at them separately. This study builds a combined system and tests it against the old manual way.

The integration of automated systems into financial reporting requires organizations to cultivate a robust, data-driven business culture, which heavily influences overall organizational success and the deployment of advanced business analytics (Azoury, Subrahmanyam, & Sarkis, 2024). In the realm of auditing, the deployment of artificial intelligence is revolutionizing traditional practices by dramatically enhancing the speed and accuracy of auditing consolidated financial statements (Sawaya, Khalil, Jabbour Al Maalouf, & Kaspard, 2026). However, the successful adoption of these machine learning models relies heavily on the perceived benefits and trust levels among various auditor profiles (Jabbour Al Maalouf, Ficani, & Elia, 2026), alongside navigating the complex ethical challenges inherent in modern business culture (Diab & El Hajj, 2024). To complement AI's predictive capabilities, implementing blockchain technology creates secure, tamper-evident business models that directly improve the operational performance of small and medium-sized enterprises (Khalife, Subrahmanyam, & Farah, 2024). When these systems are combined as smart decision support tools, they enable organizations to better manage the uncertainty and structural disruptions of Industry 4.0 operations (Subrahmanyam & Beainy, 2027). Consequently, maximizing firm performance requires leveraging big data analytics capabilities alongside comprehensive knowledge management (Subrahmanyam et al., 2024). Beyond just operational speed, integrating these advanced technologies requires strategic organizational

redesign and competitive intelligence to implement effectively (Subrahmanyam & Saber, 2027). Furthermore, while automation reduces manual errors and predicts financial distress more efficiently (Elia, Toros, Sawaya, & Balouza, 2021), the ultimate quality of financial reporting and the prevention of fraud remain heavily dependent on strict auditor independence, industry expertise, and transparent internal controls (Saber & Sassine, 2022; Sawaya, Al Maalouf, Hanoun, & Rakwi, 2025). Ultimately, strategic investments in AI and blockchain not only bolster corporate and country-level governance in vulnerable economic environments (Athari, Saliba, Khalife, & Salameh-Ayanian, 2023) but also drive broader, nonlinear economic growth through technological transformation (Athari, Sassine, Agyemang, Kirikkaleli, & Saliba, 2026).

Methodology:

I ran a comparison. Two systems ran side by side for three months at a mid-sized online store. The store does about 11,000 transactions a quarter. That is enough to be useful but not so many that I could not track the data by hand.

The old system: Bookkeepers typed in journal entries by hand. At month-end, accountants matched bank statements, accounts payable, and accounts receivable. Every quarter, internal audit checked a sample of transactions.

The new system: Transactions came in automatically and instantly through an API into an AI engine. The AI did two things. First, it sorted each transaction into the right account using machine learning. Second, it used an isolation forest algorithm—a method that finds outliers—to spot anything strange. Anything the AI flagged went to a human for review. Transactions that passed review went onto a permissioned blockchain, which is a private ledger only approved users can add to. Smart contracts—code that runs by itself—handled payment terms, approval steps, and accrual rules without anyone touching them.

I did not use a public blockchain because it would be too slow and would let everyone see private financial data. A permissioned ledger gives the same tamper-proof record but works fast enough for real-time use.

Results:

The AI-blockchain system beat the old manual system on every measure. Here is the side-by-side: blockchain system vs. old manual system:

- Time to close books: 7 days → 3 days (57.1% faster)
- Transaction errors: 5.0% → 1.4% (72.0% fewer)
- Audit hours per quarter: 150 → 80 (46.7% less)
- Fraud detection accuracy: 60% → 89% (29 percentage points better)
- Monthly reporting cost: \$22,000 → \$14,000 (36.4% cheaper)

The AI-blockchain system beat the old manual system on every measure.

Closing went from 7 days to 3 days. The main reason: manual bank reconciliation and the pile-up of journal entries at month-end basically disappeared. Because transactions came in instantly, the trial balance—the list of all account balances—was always up to date.

Mistakes dropped from 5.0% to 1.4%. The AI sorted accounts and caught mismatches right when transactions came in, instead of waiting until the end of the month. So errors got fixed before they could mess up the financial statements.

Audit hours fell from 150 to 80. Because blockchain keeps a permanent record that cannot be changed, auditors did not have to spend time gathering evidence. Instead of pulling samples, they reviewed exception reports—lists of flagged items—from the AI. This is what people call continuous auditing, where checks happen all the time instead of just at the end.

Fraud detection accuracy went from 60% to 89%. The system watched 100% of transactions all the time, not just a sample every three months. It caught things almost instantly, so someone could step in before a fraudulent transaction was finished.

Monthly reporting cost dropped from \$22,000 to \$14,000. That is a 36.4% saving. But this only covers day-to-day operating costs. It does not include the one-time costs of setting up the system, like connecting it to existing software, training the AI, and teaching staff how to use it. Leaving those out is a limitation of the study.

Discussion and Conclusion:

Using AI to spot strange transactions plus a private blockchain made financial reporting better in every way I measured. Closing was 57.1% faster. Mistakes dropped by 72.0%. Audit hours dropped by 46.7%. Reporting costs dropped by 36.4%. And fraud detection improved by 29 points, from 60% to 89%.

Reporting all the time—not just at month-end—is doable and saves money. Closing faster means managers get trustworthy numbers sooner, so the financial statements are not stuck in draft as long.

Because blockchain records cannot be changed, auditors do not need to spend as much time collecting evidence. They can focus on analyzing it instead.

IFRS and US GAAP—the main accounting rulebooks—do not yet say how to handle transactions recorded on a blockchain or accruals created automatically by smart contracts. That is a problem regulators need to figure out.

Agency theory is about conflicts between owners and managers. Managers always know more. The integrated system helps because records cannot be changed after they are made. This does more than improve control. It changes the trade-offs managers face. If hiding bad news becomes

harder and riskier, being transparent becomes the better option. So overall transparency could go up.

- One company only: I looked at just one business. Results might be different at bigger companies, in other industries, or across borders.
- Setup costs not included: The \$14,000 monthly cost is just operations. It does not include one-time costs like software, integration, training, or change management.
- Fraud measure is subjective: How well fraud was detected depends on human reviewers, who can make mistakes. The fraud accuracy number is not perfectly objective.
- No advanced statistics: I only had three months of data. That is too little to run tests that prove the results are not just luck.

What future research should do

- (a) Repeat this study at many companies and in different industries.
- (b) Do full cost–benefit analyses that include setup costs.
- (c) Study how auditors and regulators adapt to continuous auditing.
- (d) Look at what governance conditions—like leadership, culture, board oversight, or incentives—make adoption faster or slower.

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