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Small Business Financial Compliance Analytics: Reducing Regulatory Burden While Maintaining Oversight Through Data-Driven Solutions

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Abstract
In the United States, small businesses spend disproportionately high costs to comply with taxes and regulations, while compliance and enforcement do not enjoy the expected improvement in oversight quality. Nonetheless, RegTech, audit data analytics, as well as robotic process automation (RPA) offer prospects to minimize such burdens while maintaining oversight integrity. This review summarizes U.S.-focused recent literature in the accounting and information systems and regulatory spheres. This narrative review investigates how data-driven compliance solutions can promote transparency, reduce administrative overheads, and enhance enforcement's effectiveness. The review then uses a narrative systematic approach to investigate recent empirical and conceptual knowledge about Reg Tech, audit analytics, automation, and governance compatibility, supplemented with anecdotal information concerning U.S. compliance analytics readiness. As such, the evidence implies that compliance technologies enhance accuracy and reduce overheads, allowing for the introduction of risk-based oversight. However, success relies on the interoperability of data platforms, the capacity of institutions, and the accountability of regulators. Therefore, data-driven compliance analytics can enhance U.S. small business resilience and regulatory efficacy if combined with data standardization practices and oversight transparency.

Keywords: RegTech, audit analytics, robotic process automation, small business compliance, public sector analytics, regulatory burden

1. Introduction

Small businesses form the backbone of the United States economy, accounting for nearly all private enterprises and contributing significantly to job creation and innovation (U.S. Small Business Administration, 2024). Despite their importance, small and medium-sized enterprises face greater challenges than large corporations in meeting complex financial and regulatory obligations. Requirements such as tax reporting, payroll documentation, and compliance with sector-specific rules consume

considerable time and financial resources, reducing liquidity and limiting expansion opportunities (Adhikari et al., 2021; Makoni et al, 2025).

In the era of regulatory technology, also known as RegTech, there are new chances for overhauling compliance systems to one that is both computerized and analytical. These analytical tools are data-based, but also make use of artificial intelligence, cloud computing, and predictive analysis in order to simplify filing reports, reduce the risk of human error, and improve supervision for finance (Arner et al., 2017; Opoku et al, 2025). Similarly, audit analytics as well as robotic process automations can turn routine accounting tasks into efficient automated processes that allow for real-time detection of any irregularities and help improve risk management (Appelbaum et al., 2017).

In the United States, federal agencies, including the Internal Revenue Service and Small Business Administration, increasingly support technological initiatives aimed at simplifying compliance and improving data accuracy (See Tax Foundation 2024). This shift mirrors a wider national goal of addressing economic competitiveness as well as regulatory responsibility through policy reform based on more exacting data. However, many small firms remain constrained by limited digital infrastructure, technical capacity, and financial resources, which hinder their ability to adopt such tools effectively (Becker, 2020). In addition to these structural obstacles, unresolved governance issues such as the privacy of data, ethical transparency, and algorithmic accountability, complicate wider use of analytic solutions (Janssen & Kuk, 2016; Busuioc, 2021). The existing literature on these challenges is siloed across accounting, business analytics, and public administration fields, providing policymakers with an incomplete evidence base. Accordingly, this review curates the latest scholarship to determine how compliance analytics can help diminish regulatory burden whilst keeping quality of oversight high, placing data-driven compliance at the heart of contemporary U.S. regulatory reform practice.

2. Method Used

A narrative review approach was employed, focusing on scholarly studies published between 2015 and 2024 in accounting, auditing, and public administration journals. A total of fifteen (15) sources were identified through Google Scholar and ProQuest using terms such as *RegTech*, *audit analytics*, *robotic process automation*, *small business compliance*, and *risk-based regulation*. Priority was given to empirical studies, U.S.-focused research, and conceptual papers offering frameworks relevant to financial compliance modernization.

3. Comprehensive Findings

3.1 RegTech and Compliance Modernization

Regtech is a widely reported innovation that's set to be as trans formational for the compliance sector as fintech has been for banking. RegTech offerings deploy real-time analytics, cloud technology and machine learning to automate compliance-monitoring tasks that would have previously been undertaken manually at great expense. Arner et al. (2017) highlight the value proposition of increased transparency and timeliness in financial reporting as facilitated by RegTech. Becker (2020) shows that firms using RegTech platforms are able to realize reductions in their compliance costs and increased data accuracy. Charoenwong et al. (2024) provide empirical evidence from U.S. financial institutions, showing that technology-enabled compliance implies profit and operational resilience.

In the small business context, RegTech has the promise of solving longstanding disparities in a compliance structure. Automated compliance dashboards and cloud filing platforms enable small-market

firms to simply report year after year on an ongoing basis without the need for huge accounting departments. This is consistent with new U.S. policies supporting less burdensome business-to-regulator data sharing practices. This relationship among data platforms, cloud tools, and real-time analytics is illustrated in Figure 1, which outlines the core technological components that enable modern RegTech solutions. However, many small businesses lack the digital infrastructure and capabilities to implement such solutions effectively (Becker 2020). The penetration of RegTech will thus be influenced by user-friendly design, low-cost deployment, and coordinated public-private data standards.

3.2 Audit Analytics and Risk-Based Oversight

Audit data analytics are tools that have been hailed as necessary for enhancing the detection of risk and reducing the cost of oversight. Appelbaum et al. (2017) state that proponents of analytics-driven auditing allow auditors and regulators to analyze entire data sets rather than sample testing, leading to improved accuracy and coverage. Kokina and Davenport (2017) suggest that data-driven audits reduce the number of false negatives in fraud and speed up audit cycles. In the United States, recent research combines audit analytics with increased effectiveness of public sector auditing by way of states and federal agencies applying predictive models to determine which filings or transactions have high risk and transactions that require review (Janssen & Kuk, 2016; Yeboah et al, 2026 a).

For small businesses, audit analytics provides an opportunity to improve compliance assurance without the expenses associated with repetitive external audits. Predictive algorithms can identify anomalies in the accounting books and flag them, to be brought to the attention of management before going to regulators. This move to continuous auditing enables the firms to have constant compliance monitoring, and for regulators, it means that they can target resources in high-risk areas rather than conducting uniform manual reviews. Notwithstanding these advantages, some authors have issued a note of caution drawing attention to the question of data quality and harmonised accounting standards to secure that automation produces robust results across industries (Klievink et al., 2017).

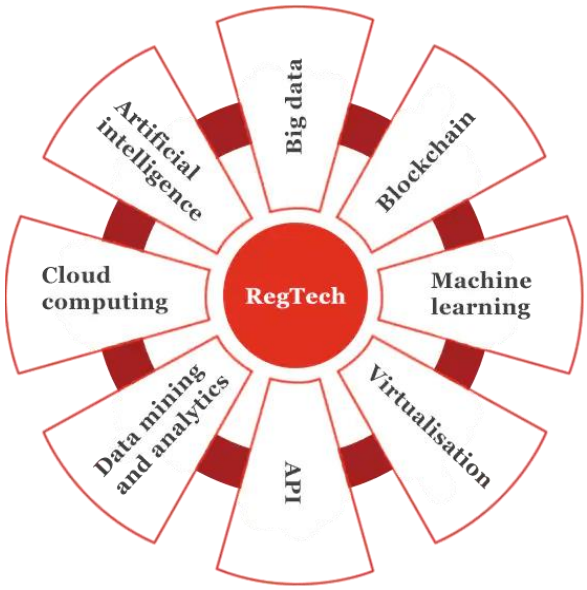

Figure 1: ***Components of RegTech. Note.*** **Technological components and contributors to RegTech. From** ***Regulatory compliance in finance: Leveraging digital platforms*****, by F. Ghunaim, 2023, iSpectra (https://www.ispectra.co/blog/regulatory-compliance-finance-leveraging-digital-platforms).**

3.3 Robotic Process Automation and Task Efficiency

Robotic process automation is a key driver of efficiency in financial operations. It automates repetitive, rule-based activities such as invoice processing, bank reconciliation, payroll data entry, and report generation. Willcocks and Lacity (2016) point out that RPA implementation at major organizations yielded significant time savings and reduced human error, allowing employees to focus on higher-value analytical work. In the context of small businesses, RPA tools integrated with cloud accounting systems can minimize the need for manual bookkeeping and external compliance support.

Empirical studies show that RPA adoption in compliance functions leads to higher accuracy in data processing and faster turnaround times for reporting (Becker, 2020). When combined with RegTech applications, RPA serves as a foundation for continuous compliance, linking daily transactions directly to regulatory data submission portals. However, research highlights challenges related to cybersecurity, software maintenance, and initial installation costs for small firms with limited IT expertise (Busuioc, 2021). Addressing these barriers requires collaborative approaches between technology providers and small business associations to deliver secure and scalable automation solutions.

3.4 Governance, Big Data, and Public Sector Readiness

The ability of data-driven compliance systems to maintain public trust is contingent on governance frameworks that ensure accountability, transparency, and ethical oversight. Janssen and Kuk (2016) argue that while algorithms can boost administrative efficiency, their opaque nature may undermine democratic accountability if not properly regulated. Klievink et al. (2017) also add that public agencies develop technical capacity and governance structures to manage the risks of algorithmic decision-making, especially in regulatory contexts. Von Solms (2021) proposes a conceptual model for integrating regulatory technology into the public sector, emphasizing participatory governance and cross-agency collaboration.

Within the U.S. context, readiness for data-driven regulation remains uneven across federal and state institutions (Yeboah et al, 2026 b, Asamoah et al, 2025). Agencies such as the Securities and Exchange Commission have successfully adopted analytic tools to detect financial misconduct, while others continue to rely on manual audits and fragmented databases. The literature highlights that improving interoperability among regulatory agencies and establishing uniform data standards are crucial to widespread adoption of compliance analytics. Additionally, scholars warn that excessive reliance on algorithmic systems may reduce human judgment in enforcement, leading to potential biases and fairness concerns (Busuioc, 2021; Obodai et al, 2025).

3.5 Evidence on Small Business Compliance

Empirical research consistently shows that small businesses face higher relative compliance costs compared to larger firms. This national cost disparity as illustrated in Figure 2, highlights the disproportionately high regulatory expenses borne by U.S. small businesses. Ernest (2022) reports that U.S. small businesses spend a substantial share of their revenue on compliance, primarily due to the complexity of tax systems and frequent rule changes. The challenges small businesses report are consistent with the patterns shown in Figure 3, which summarizes regulatory burdens identified through NYC's Small Business First outreach initiative. Simplified reporting systems, cloud-based accounting tools, and automated analytics can reduce these costs by providing real-time error detection and standardized submission templates. Policy-oriented analyses also show that automation encourages voluntary compliance and reduces enforcement expenditures (Tax Foundation, 2024).

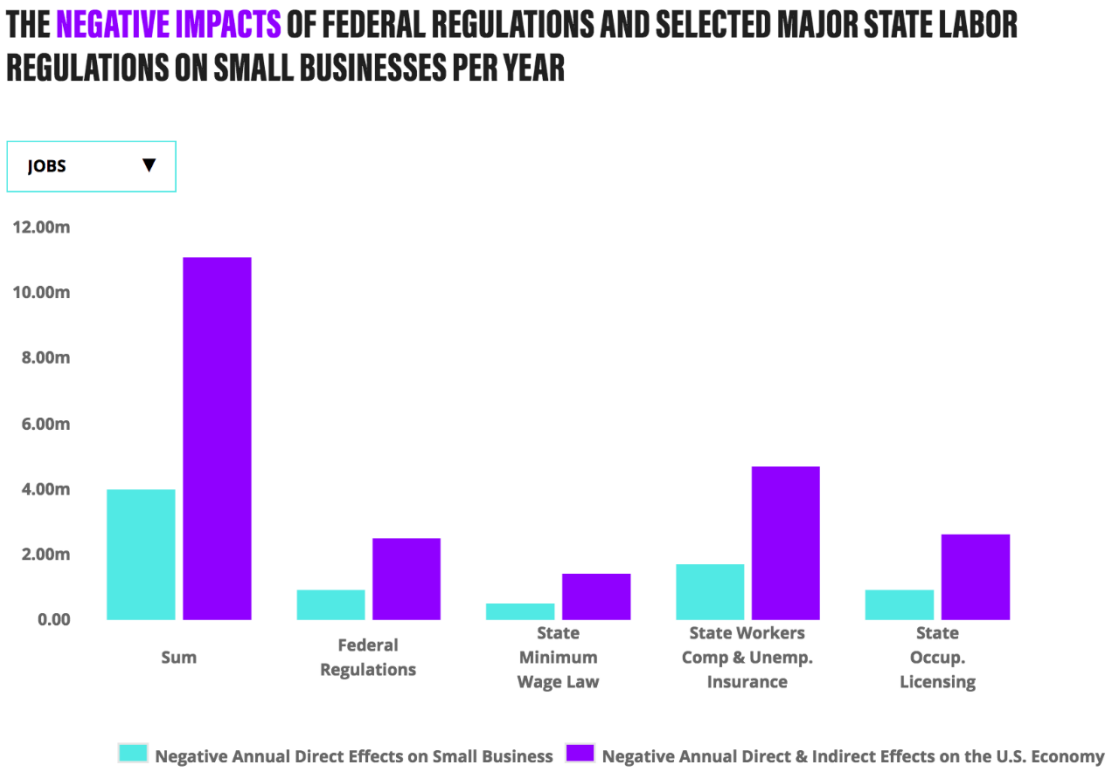

Figure 2: ***Regulatory burden on U.S. small businesses. Note.*** **Annual regulatory cost estimates for small businesses as of 2017. From** ***How regulations at every level hold back small business*****, by S. Hackbarth, 2017, U.S. Chamber of Commerce (https://www.uschamber.com/small-business/how-regulations-every-level-hold-back-small-business). Public domain.**

Recent evidence suggests that analytics-enabled compliance systems enhance data reliability and transparency, thereby creating trust between small businesses and regulators. Pilot programs in states such as California and Texas have demonstrated that digital tax filing and automated verification reduce processing times and improve accuracy in reporting. These studies highlight the potential for data-driven compliance to strengthen both firm-level performance and overall economic governance.

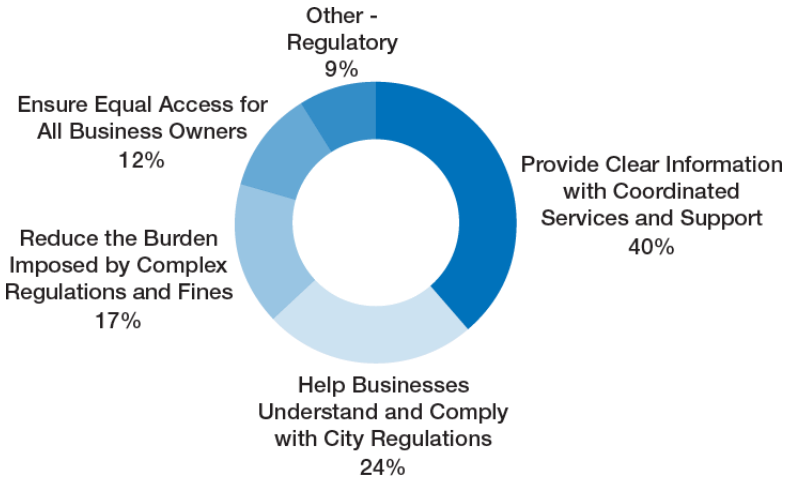

Figure 3: *Regulatory burden on NYC small businesses: Public Outreach Results.* This illustration shows the results of more than 600 responses submitted by small business owners and stakeholders during the

City's Small Business First initiative launched in 2014. From *Small Business First: The Challenge*, by City of New York, n.d., NYC Small Business First (https://www.nyc.gov/site/smallbizfirst/challenge/challenge.page). Public domain.

3.6 Implementation Enablers and Risks

Available literature identifies several enablers that determine the success of compliance analytics adoption. First, interoperability between accounting systems and regulatory databases facilitates seamless data exchange, reducing duplication and error. Second, affordable access to technological infrastructure encourages small business participation. Third, partnerships between regulators and industry associations can promote knowledge sharing and co-development of ethical technology frameworks. Finally, the existence of governance safeguards for privacy and bias mitigation ensures prolonged public trust (Becker, 2020; Busuioc, 2021).

Nonetheless, significant risks remain. Algorithmic systems may unintentionally be bias against certain firm categories if trained on biased data. Cybersecurity vulnerabilities can leak sensitive financial information. Overreliance on automation may also displace accountants or compliance officers, reducing human oversight. Mitigating these risks requires multi-level policy interventions, including regulatory sandboxes, third-party audits of algorithmic models, and public funding for small business digital transformation. Collectively, these findings reveal that while data-driven compliance has transformative potential, its equitable and ethical implementation depends on institutional readiness, regulatory design, and social trust.

4. Research Gaps and Recommendations for Further Study

While existing scholarship establishes the transformative potential of data-driven compliance analytics, notable research gaps persist that limit comprehensive understanding and long term implementation. The first and most evident gap concerns the scarcity of longitudinal evidence on the sustained impacts of regulatory technology adoption within the U.S. small business sector. Many studies document short-term cost savings and efficiency improvements, yet there is limited empirical assessment of whether these technologies improve firm survival rates, profitability, or compliance behavior over time (Becker, 2020). Future research should therefore employ longitudinal designs to measure outcomes across different stages of adoption and maturity.

A second gap relates to the heterogeneity of small businesses. Most available studies generalize across firms without accounting for industry-specific compliance demands, regional regulatory environments, or firm size variations. Small service providers may face different technological and financial constraints compared to small manufacturers or energy firms. Comparative research across these categories would allow for the development of tailored compliance frameworks that address sector-specific risks and digital capacity levels.

A third area requiring attention is the limited theoretical integration between traditional compliance and behavioral regulation theories and modern data-driven compliance frameworks. Although RegTech and analytics are often studied as technical innovations, little work connects them to behavioral motivations underlying compliance decisions. Future research should examine how automation, predictive reporting, and algorithmic oversight influence managerial decision making, trust in institutions, and perceptions of regulatory legitimacy (Janssen & Kuk, 2016; Busuioc, 2021).

Moreover, more interdisciplinary work is needed to understand the governance implications of widespread

analytics adoption. Studies rarely explore the institutional capacity of U.S. regulatory bodies to manage algorithmic oversight systems. Policy research could investigate how regulators balance innovation with accountability, especially concerning data privacy, fairness, and transparency. Evaluating different models of algorithmic auditability and oversight will help identify governance standards that align with U.S. administrative law.

Finally, methodological limitations persist across existing studies. Most research relies on qualitative case studies or conceptual analyses without rigorous quantitative validation. Future work should employ mixed methods that combine econometric modeling, experimental designs, and qualitative field research. Collaboration between academia, small business associations, and federal agencies would facilitate access to reliable datasets for evaluating compliance innovations.

Addressing these research gaps will advance theoretical development, support evidence-based policymaking and guide the equitable digital transformation of small business compliance systems in the United States.

5. Conclusion

This review demonstrates that data-driven approaches to compliance analytics can reduce small business regulatory burdens in the US and improve oversight quality. In general, regulatory technology (RegTech), audit analytics, and robotic process automation create more transparency, reduce operating costs, and increase financial accountability. According to the literature, successful implementation is contingent on data interoperability and ethical governance, improved regulatory oversight of firms. Policymakers are urged to consider investments in pilot programs and digital platforms that facilitate affordable compliance mechanisms adapted to the actual circumstances of small businesses. Equitable adoption also needs clear benchmarks of algorithmic fairness and privacy protection. Overall, data-driven compliance analytics represents a chance to bring some elements of regulatory systems into the modern age and improve the long-term resilience of America's small business sector. The continued integration of research across disciplines and testament to policy will be necessary to achieve these results sustainably.

References

1. Adhikari, B., Alm, J., & Harris, T. F. (2021). Small business tax compliance under third party reporting. *Journal of Public Economics, 203*, Article 104514. https://doi.org/10.1016/j.jpubeco.2021.104514
2. Appelbaum, D., Kogan, A., & Vasarhelyi, M. A. (2017). Big data and analytics in the modern audit engagement: Research needs. *Auditing: A Journal of Practice & Theory, 36*(4), 1–27.
3. Arner, D. W., Barberis, J., & Buckley, R. P. (2017). FinTech, RegTech, and the reconceptualization of financial regulation. *Northwestern Journal of International Law and Business, 37*(3), 371–414.
4. Becker, M., Merz, K., & Buchkremer, R. (2020). RegTech: The application of modern information technology solutions in regulatory affairs: Areas of interest in research and practice. *Intelligent Systems in Accounting, Finance and Management, 27*(4), 161–167.
5. Busuioc, M. (2021). Accountable artificial intelligence: Holding algorithms to account. *Public Administration Review, 81*(5), 825–836. https://doi.org/10.1111/puar.13379
6. Charoenwong, B., Kowaleski, Z. T., Kwan, A., & Sutherland, A. G. (2024). RegTech: Technology-driven compliance and its effects on profitability, operations, and market structure. *Journal of Financial Economics, 154*, 103792.

7. City of New York, Department of Small Business Services & Mayor's Office of Operations. (n.d.). *Small Business First: The Challenge*. NYC Small Business First. Retrieved from https://www.nyc.gov/site/smallbizfirst/challenge/challenge.page
8. Eric Asamoah, & Jehu Emefa Nii-Laryea Laryea. (2025). Leveraging Artificial Intelligence for Advanced Deal Sourcing in U.S. Mergers and Acquisitions to Improve Financial Efficiency. Sarcouncil Journal of Multidisciplinary, 5(10), 68–78. https://doi.org/10.5281/zenodo.17400663
9. Ghunaim, F. (2023, December 4). *Regulatory compliance in finance: Leveraging digital platforms*. iSpectra. https://www.ispectra.co/blog/regulatory-compliance-finance-leveraging-digital-platforms
10. Hackbarth, S. (2017, March 28). *How regulations at every level hold back small business*. U.S. Chamber of Commerce. https://www.uschamber.com/small-business/how-regulations-every-level-hold-back-small-business
11. Hasan, I., Horvath, R., & Mares, J. (2022). Do public investments in infrastructure enhance productivity growth? Evidence from U.S. states. *Journal of Macroeconomics, 72*, Article 103449. https://doi.org/10.1016/j.jmacro.2022.103449
12. Janssen, M., & Kuk, G. (2016). The challenges and limits of big data algorithms in technocratic governance. *Government Information Quarterly, 33*(2), 371–377.
13. Klievink, B., Romijn, B. J., Cunningham, S., & de Bruijn, H. (2017). Big data in the public sector: Uncertainties and readiness. *Information Systems Frontiers, 19*(2), 267–283.
14. Kokina, J., & Davenport, T. H. (2017). The emergence of artificial intelligence: How automation is changing auditing. *Journal of Emerging Technologies in Accounting, 14*(1), 115–122.
15. Makoni, C. K., Obodai, E. T., & Laryea, J. E. N.-L. (2025). Strengthening small business financial resilience: How enhanced cashflow management practices can reduce economic volatility in the U.S. EPRA International Journal of Economic and Business Review, 13(10). https://doi.org/10.36713/epra24427
16. Obodai, E. T., Akalia, R., and Buabin, W. K. A. ―Digital Transformation in Financial Operations: A Review of Fintech Adoption and Its Implications for U.S. Regulatory Policy and Market Stability." Sarcouncil Journal of Economics and Business Management 4.10 (2025): pp 20-36.
17. Opoku, E. K., Makoni, C. K., & Buabin, W. K. A. (2025). Enhancing bankruptcy prediction accuracy: The role of financial and non-financial indicators in the U.S. capital market. Sarcouncil Journal of Economics and Business Management, 4(10).
18. Tax Foundation. (2024). *US business tax compliance costs: Survey results.* Washington, DC: Author. https://taxfoundation.org/research/all/federal/us-business-tax-compliance-costs-survey/
19. U.S. Small Business Administration. (2024). *Small business economic profile: United States.* Washington, DC: Author.
20. von Solms, J. (2021). Integrating regulatory technology (RegTech) into the digital transformation of a bank treasury. *Journal of Banking Regulation, 22*(3), 191–207. https://doi.org/10.1057/s41261-020-00138-w
21. Willcocks, L., Lacity, M., & Craig, A. (2016). Robotic process automation at Telefónica O2. *MIS Quarterly Executive, 15*(1), 21–35.
22. Yeboah, M. M., Agyei, E., Anim, B., Nwinyi, P. & Nartey, O. L. "AI in Financial Auditing: Addressing U.S. Audit Failures and Strengthening PCAOB/SEC Compliance." Sarcouncil Journal of Economics and Business Management5.1 (2026): pp 23-32.

23. Yeboah, M.M., Nartey, O., Agyei, E., & Anim, B. (2026). AI and Blockchain in Forensic Auditing: A Review of Tools for Investigating Financial Crimes in the U.S. *International Journal For Multidisciplinary Research*.