MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1s, 2026, Pages: 876-878

FORENSIC ACCOUNTING AND AI INTEGRATION: A STRATEGIC APPROACH TO DETECTING CORPORATE FINANCIAL FRAUDS

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Abstract
The increasing complexity of financial transactions and digitalization of corporate has significantly increased the volume of fraudulent transactions and unethical practices in the corporate world. The evolution of digitalization has also increased the risk and intricacy of financial fraud. The traditional forensic accounting practices are effective, but are inadequate to present the complexity of modern corporate fraud. Here, this paper explores the strategic integration of forensic accounting and artificial intelligence to enhance the early fraud detection, investigative efficiency and regulatory compliance. Using a conceptual analytical framework backed by global and Indian case illustrations, it examines the effectiveness of Artificial Intelligence and AI driven forensic models, analyse the controllable and ethical challenges and it forwards a technology enabled forensic governance architecture. This study suggests that AI integrated forensic accounting seriously improves the fraud detection accuracy, it minimizes the investigation time, and strengthens corporate governance, positioning it as a critical pillar of modern financial oversight.
Keywords: Forensic Accounting, Artificial Intelligence, Machine Learning, Fraud Detection, Corporate Governance.

Introduction
The existence of financial crimes and frauds are possessing a serious threat to organizational sustainability and the confidence of investors which leads to overall economic degradation. As the development strategies and regulatory systems are improving, still it is not able to completely vanish the cyber crimes involving financial matters. The use of traditional forensic accounting methods which include only document verification is like a post-mortem, which will not necessarily give a prompt output. So it has some kind of disadvantages as it is conducted in an interrogation based investigation method. It causes difficulties because these methods also need large volume of raw and processed data to operate after the fraud has already occurred. Artificial intelligence (AI) and Machine Learning (ML) have emerged as transformative technology in assisting finding early financial frauds.The study investigates AI-based forensic accounting as a strategic tool which enables organizations to identify corporate financial fraud during its early detection window. The study examines theoretical foundations, technological applications, regulatory aspects, and ethical issues, while drawing knowledge from both Indian and international fraud cases. The paper aims to contribute to forensic accounting literature by offering a structured strategic framework for AI integration which organizations can use to detect corporate fraud.

2. Objectives of the Study
1. To analyze the role of forensic accounting in corporate fraud detection.
2. To examine the integration of AI and ML tools in forensic accounting practices.
3. To assess the effectiveness of AI-driven models in early fraud detection.
4. To explore regulatory, ethical, and governance implications of AI-based forensic systems.
5. To propose a strategic framework for AI-enabled forensic accounting in corporate environments.

3. Significance of the Study
This study is important because it combines forensic accounting and artificial intelligence and takes a forward-thinking approach to prevent corporate fraud. As financial crimes and technology-based crimes are becoming more complicated, it can no longer be assumed that traditional auditing/audits and investigation methods will be adequate for detecting sophisticated fraud schemes. This research provides insights into how AI can enhance forensic capabilities such as real-time monitoring, predictive analytics, and automated anomaly detection. The study will benefit regulators, corporate boards, auditors, forensic professionals, and policymakers by providing a clear understanding of the strategic, ethical, and governance considerations that need to be considered in order to adopt an AI-based forensic system. It will also contribute to the growing body of literature on forensic analytics and the digital transformation of accounting.

4. Scope of the Study
This study examines how forensic accounting and the use of artificial intelligence are used in the detection of corporate financial fraud across both India and globally. The specific types of corporate financial fraud examined in this study include: financial statement fraud, assets misappropriated, corruption and cyber-enabled financial crimes. The research includes a review of conceptual models, regulatory frameworks and various technological tools available for forensic analytical purposes. This study is largely a review of the literature but does include some illustrative case studies to provide some examples to support this research. Primary data collection or experimental testing will not be conducted. The scope of this study will consist of the use of secondary data, published cases and analytical frameworks to evaluate the current state of knowledge about AI-enabled forensic accounting in a comprehensive but non-empirical manner.

5. Limitations of the Study
This research is based entirely on secondary research data; therefore, there may be limitations related to the inability to access confidential details about corporate fraud cases. Because artificial intelligence has progressed so rapidly, many of the tools and models applied in this study will likely become outdated within the foreseeable future. Since there was no empirical primary testing conducted, the ability to quantitatively validate the conceptual framework is limited. Additionally, varying laws and regulations within different jurisdictions may impact the generalizability of the results. Despite these limitations, the study provides valuable conceptual and strategic insights that are applicable to things currently occurring in forensic accounting.

6. Review of Literature
Bhasin (2015) emphasized the expanding role of forensic accounting in detecting and preventing corporate fraud, highlighting the need for advanced analytical tools. Kokina and Davenport (2017) explored the application of AI in accounting and auditing, demonstrating its potential to enhance anomaly detection and decision-making.
Perols et al. (2017) examined data-driven forensic techniques, finding that predictive analytics significantly improve fraud detection accuracy.
Appelbaum, Kogan, and Vasarhelyi (2018) discussed continuous auditing and the role of AI in real-time assurance, emphasizing its relevance for forensic investigations.Sun, Strang, and Firmin (2020) analyzed machine learning models for fraud detection and found that ensemble algorithms outperform traditional statistical techniques.Ramaswamy (2021) studied forensic accounting practices in India and identified technology adoption as a key determinant of investigative effectiveness

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7. Research Methodology

7.1 Research Design

The study adopts a **descriptive and analytical research design**, integrating conceptual analysis with evidence from secondary literature and case documentation.

7.2 Data Sources

Forensic accounting has historically been performed using investigative techniques, litigation support, and fraud examination by applying accounting, auditing, and legal principles. However, with the recent integration of Artificial Intelligence (AI) into forensic accounting processes enhances how these historical practices are completed by forensic accountants in the following ways:

• Utilization of Data Mining and Pattern Recognition to identify hidden relationships in large amounts of data.
•Utilization of Machine Learning Algorithms to learn about previous fraud patterns to forecast new fraud.
•Utilization of Natural Language Processing (NLP) to analyze unstructured data including emails, contracts, and reports.

7.3 Analytical Framework

Forensic accounting has always performed three basic functions: Investigation, litigation support, and fraud examination by using accounting, auditing, and legal expertise. The integration of artificial intelligence (AI) improves and enhances those functions. For example, in the covered areas of forensic accounting:

• Data mining and pattern recognition: Used to locate hidden connections among large groups of data.
• Machine learning algorithms: By utilizing historical data from the detected fraudulent issues, it will be able to recognize fraud patterns to predict future fraudulent issues.
• Natural language processing (NLP): The ability to interpret unstructured data, such as email, contracts, and reports, etc.
• Robotic process automation (RPA): Automating many of the repetitive and time-consuming tasks associated with forensic accounting increases efficiency.

Through this integration, the ability to monitor, on a continuous basis will replace periodically conducting investigations, transforming the traditional use of forensic accounting into an effective tool for proactive governance.

8. Case Illustrations: Indian and Global Perspectives

Case study 1

ICICI Bank– Videocon Loan Controversy

Particulars	Details
Bank Involved	ICICI Bank
Borrower	Videocon Group
Period of Loan Sanction	2009–2011
Total Loan Exposure	₹3,250 Crore
Alleged Kickback Investment	₹64 Crore
Estimated NPA Loss	₹1,730 Crore
Detection Method	Whistleblower complaint and regulatory investigation
Investigating Agencies	CBI, RBI, SEBI

Explanation

The ICICI Bank–Videocon case represents a **conflict of interest and governance failure in banking operations**. The controversy arose when loans were sanctioned to the Videocon Group while financial links allegedly existed between the borrower and a company associated with the CEO's family. A whistleblower complaint triggered internal investigations and regulatory scrutiny. Eventually, the loans turned into non-performing assets, causing significant financial loss to the bank.

Financial Impact of Videocon Loan Case (₹ Crore)

Loan Exposure [redacted] 3250

Loan Turned NPA [redacted] 1730

Alleged Investment [redacted] 64

Interpretation

The graph highlights the **scale of financial exposure compared with the alleged benefit received**. Although the alleged investment amount was relatively small, the resulting loan default created a substantial financial impact on the bank.

Case study 2

Toshiba Accounting Scandal (Japan, 2015)

Particulars	Details
Company	Toshiba Corporation
Country	Japan
Fraud Period	2008–2015
Nature of Fraud	Profit overstatement
Total Profit Overstatement	¥151.8 Billion
Detection	Independent investigation panel
Consequences	Financial restatement and CEO resignation

Profit Overstatement Pattern

Year	Actual Profit	Reported Profit
2010	**80**	**95**
2011	**75**	**90**
2012	**70**	**88**
2013	**72**	**92**
2014	**78**	**96**

Explanation

The Toshiba accounting scandal involved the **systematic overstatement of profits for several years**. Senior management reportedly pressured employees to meet unrealistic financial targets, which resulted in manipulation of accounting entries. The fraud was eventually uncovered through an independent investigation panel, leading to the restatement of financial reports and resignation of top executives.

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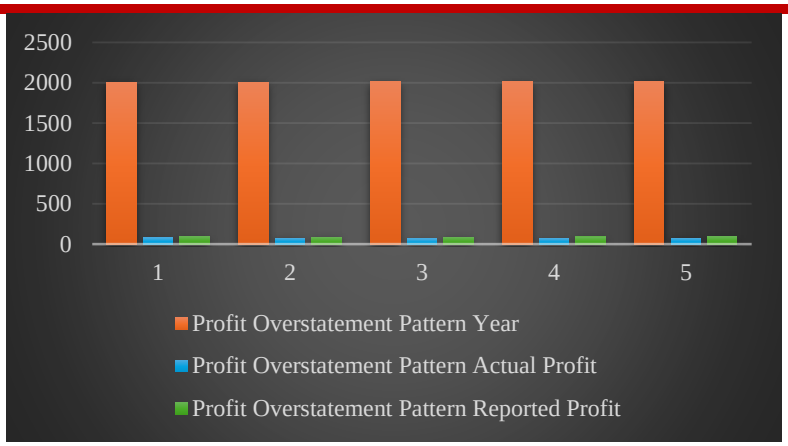

Interpretation

The graph illustrates a consistent gap between actual and reported profits, indicating deliberate earnings manipulation across multiple years.

9. Challenges in AI-Driven Forensic Accounting

- **The quality and availability of data:** For making a rational decision in the field of AI enabled forensic accounting, it requires large amount of clean datasets. Incomplete, biased and manipulated data can influence the results and it reduces the reliability which leads to false positives and negatives.
- **Concerns of ethics and privacy:** For taking decisions regarding forensic accounting it takes continuous observation and routine checking which will affect the employee morale and privacy.
- **Constraints regarding legal procedures:** The existing laws and framework may not be sufficient in judging the accounting crimes in the aspect of AI driven evidence.
- **Lack of skilled personality:** Efficient and trained professionals are the another challenging factors faced by the organisations. To identify the financial crimes involving AI, it is substantial for the persons to have the skills.

10. Opportunities and Strategic Advantages

- **Early detection of Frauds:** Through the implementation AI driven tools and techniques in accounting practices, it is easy to identify the threats and fraudulent conducts in organisation.
- **Increased efficiency in investigation:** The automation and AI tools has substantially reduced the manual workload and it automatically improves the work allocation.
- **Increased Corporate Governance:** AI driven tools and techniques helps in strengthening internal control and risk management which increases the efficiency.
- **Regulatory compliance:** By following the standard practices forwarded by the AI driven tools will increase the compliance with regulatory measures and improve the audit quality.

11. Results and Discussion

The analytical inference from this study is the effective implementation of AI driven tools and techniques in organisation can helps the professionals in early identification of financial frauds and threats possesses by misappropriation of funds and resources. These AI driven models demonstrate serious anomaly detection compared to the traditional rule based systems. However, the successful data extraction and information finding is only possible if the data provided are unbiased, professional and unambiguous.

12. Future Directions and Policy Implications

Future research should focus on clearing the obstacles and research gaps in the existing study and practices in financial organisations. Researchers also need to focus on developing AI- forensic frameworks. Academic institutions need to frame their curriculum incorporating forensic analytics and AI in accounting. Organizations should also need to focus on overcoming the above mentioned challenges in infrastructure, AI implementation, skilled personalities etc.

13. Conclusion

This study presents the integration of forensic accounting with Artificial Intelligence and Machine Learning tools represents the transformation of fraud detection from the traditional ways to a more efficient and automated way which is backed by the data and information gathered. AI-driven forensic systems enhance early detection, investigative efficiency, and governance quality, addressing the limitations of traditional forensic methods. While this also faces some challenges regarding data quality, ethical issue and legal constraints. The future of fraud detection lies in the dedication in research and technological innovation.

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