ASSESSING THE SIGNIFICANT ROLE OF AI IN THE EMERGING STATE OF FORENSIC ACCOUNTING

[1]Ms.Janaranjani.M, [2]Dr.S.Manjula,

[1]Research Scholar, [2]Assistant Professor
[1]Department of Commerce
[1]PSG College of Arts and Science, Coimbatore, India

Abstract: This article aims to project the impact of Artificial Intelligence on Forensic Accounting in the field of education and the magnitude of AI in incorporating Forensic Accounting practices. This article uses Systematic Literature Review (SLR) to provide a comprehensive analysis of literature pertaining to Forensic Accounting. Educational institutions find it difficult to incorporate Forensic Accounting Course due to expertise gaps and interdisciplinary challenges, while AI enhances fraud detection by analyzing large datasets. Consequently, AI and forensic accounting skills are vital for auditors, and reviews confirm their efficacy in fraud prevention and detection. In accordance with the published literatures it is obvious that numerous studies have been conducted in analyzing the effect of Artificial Intelligence on Forensic Accounting.

Index Terms - Forensic Accounting, Artificial Intelligence, Fraud detection, Fraud prevention

I. INTRODUCTION

With new levels of automation, precision, and efficiency in fraud detection, financial investigation, and regulatory compliance, artificial intelligence (AI) is revolutionizing the profession of forensic accounting. Forensic accountants are using AI-driven tools to improve fraud prevention and forensic investigations as companies and financial institutions deal with an increased risk of fraudulent activity.

Focusing on Research and Challenges, Education and Fraud Detection

A lot of research has been done recently on the value of forensic accounting in identifying and stopping fraud. Numerous scholars have investigated new developments, difficulties, and best practices in the teaching and use of forensic accounting. The ideal skill set needed for forensic accountants in Saudi Arabia was investigated by Alzahrane (2023), who also pointed out the deficiencies in forensic accounting education and the necessity of developing curricula to satisfy business demands. In a similar vein, Bartulović and Marić Stojan (2023) compared forensic accounting education in several countries and found notable differences in formal forensic accounting education and training programs across the globe.

The interdisciplinary character of the topic and institutional constraints are two major obstacles to the establishment of forensic accounting courses at Australian institutions, according to Al-Shurafat et al. (2024).

The Impact of Digital Technology on the Progression of Financial Fraud

The digital age has fundamentally altered financial fraud, with technological progress and increased online transactions creating novel detection and prevention challenges. While digital tools enhance business operations, they also enable sophisticated, hard-to-detect fraudulent activities, as noted by Altuk (2020). This necessitates advanced fraud prevention strategies. A key development is the rise of cybercrime, encompassing identity theft, online banking fraud, and credit card fraud. The Internet's global reach and rapid data transfer, as highlighted by Dumitrescu & Marica (2020), complicate the tracing and prosecution of these crimes, underscoring the need for updated security measures.

Data Analytics and Forensic Accounting

Imjai et al. (2024) looked into how Thailand's Generation Z accountants are learning forensic accounting techniques, stressing the use of big data analytics and diagnostic abilities in forensic accounting procedures. The use of AI and data analytics in fraud detection has also been emphasized by recent forensic accounting study. In their systematic evaluation of forensic accounting research, Ellili et al. (2024) noted the growing dependence on data analytics for fraud risk assessment as well as shortcomings in digital forensics. With developments in AI and data analytics, forensic accounting education keeps changing. After analyzing the efficacy of several teaching strategies in forensic accounting education, Alshurafat et al. (2020) came to the conclusion that students benefit most from case-based and hands-on learning.

The Role of AI in Forensic Accounting

With the rise of financial scams, auditors face growing challenges in ensuring accurate financial reporting. Artificial intelligence offers a powerful solution, enhancing the ability to analyze and identify discrepancies in financial information, thereby strengthening auditing practices. Kamakshi Mehta et al (2021). "A key development in forensic accounting is the integration of big data analytics. By enabling the efficient analysis of extensive financial datasets, this technology empowers forensic accountants to identify irregularities and patterns associated with fraud, notably enhancing the detection of manipulated financial reports that can destabilize market integrity (Kilic, 2020)."

2. Objectives:

1. To improve forensic accounting education by integrating AI.
2. To develop AI-powered models for forensic accounting practices.
3. To apply practical AI knowledge in forensic accounting.
4. To explore AI applications in forensic accounting through research.

PRISMA Model-Based Systematic Reviews:

The PRISMA model has been explicitly used in a number of studies to increase the rigor and transparency of systematic reviews in forensic accounting. For instance, Allen et al. (2021) used the PRISMA model in a systematic review to evaluate how well forensic accounting works to stop financial crimes. By ensuring that the reviewed research meet strict criteria for methodological quality, PRISMA helps to shed light on the different forensic accounting methods and procedures.

3. Literature Review

Mohammed A. Alzahrane (2023) gathered data through electronic questionnaires. The author states that the use of Forensic Accounting is a reliable financial reporting. But the curriculum of Saudi Arabia do include Forensic Accounting courses. The study uses T test for the analysis.

Bartulović, Marijana et el., (2023) have prepared this article in view to find out the comparative analysis of formal education in Forensic Accounting. The study examined the curriculum material and the teaching pedagogy of Forensic Accounting across various nations. The study concludes that there are differences in the curriculum pertaining to Forensic Accounting because some uses the extensive study and while others limit the scope of Forensic Accounting in the curriculum.

James.A.DiGabricle, et al, (2020) integrate the literatures and the court rulings pertaining to Forensic Accounting subjects to identify the areas which requires more study and better understanding of the nature of Forensic Accounting for future research.

Olubusola Odeyenni, et al, (2024) focused on the development of various methods in the digital era. The study emphasizes how financial crimes are always changing, necessitating craetive and adaptable solution from forensic accountants to avoid fraud through digital platforms. The study concludes that Forensic Accounting is vital as far as Financial fraud is concerned.

Losita Eberechukwu Daraojimba, et.et., (2023) identifies different types of financial fraud prevalent in US by focusing the impact of increasing technological advancements. The study analyses the limitations and shortcomings of the Forensic Accounting practices by concentrating the need for the enhancement of skills and Forensic Accounting tool. The research leads to the further exploration of the long term effectiveness of new technologies in Forensic Accounting.

Esraa Esam Alhsrasis (2023) states the mindfulness of Forensic Accounting in Jordan. This article surveys the academician's views and thoughts towards the performance of Forensic Accounting tools and techniques in preventing the fraud and detecting the fraudulent practices. Data has been collected through questionnaire and the study finds that the academicians have low level of awareness on the Forensic Accounting and its importance. It further suggests the need to combine the Forensic Accounting education within the accounting progression.

Nejla Ellili et el., (2024) conducted a study on the upcoming trends in Forensic Accounting and bridging the gaps. The study uses the systematic review of the literature. The study finds that bridges in Forensic Accounting and discovering of fraud worldwide is possible when the research turns into technology, data analytics and assessing the risk of fraud.

AhmedMustafa Ali et el., (2024) projects in their article that how the novel Forensic Accounting Technology is effective in detecting the frauds. The articles analysis the effects of blockchain technology using regression analysis and the Forensic Accounting tools Beneish M Score Model in scrutinizing the financial statements of the companies. This article concludes how well the Forensic Accounting tools helps in detecting the fraud by increasing transparency.

4. Methodology

Secondary data is used to analyze existing literature reviews on Forensic Accounting. The methodical approach states that financial fraud is grueling and one must know the intensity of it. Baljinder Kaur, et al, (2023). The synthesized research gives the distinguished value of Forensic Accounting incorporated by the systematic review method followed by empirical approaches provided by various literature reviews. Nourhene Guellim, et al. (2024).

A number of essential processes are included in Shafril, Samsuddin, and Samah's (2020) explanation of the SLR technique, including the identification, selection, critical review, and summarization of prior research. According to Paul, Lim, O'Cass, Hao, and Brescian (2021), this systematic approach provides guidance for future research initiatives and ensures a thorough overview of the current state of knowledge in the subject (Rethlefsen and Page 2022). The comprehensive, transparent, systematic, and rigorous nature of the SLR is emphasized by Camango and Cândido (2023). The systematic review method can be broken down into six (06) phases, as shown in figure 01, as described in the literature.

Source: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3844260

Figure 4.1

Sample Selection Steps:
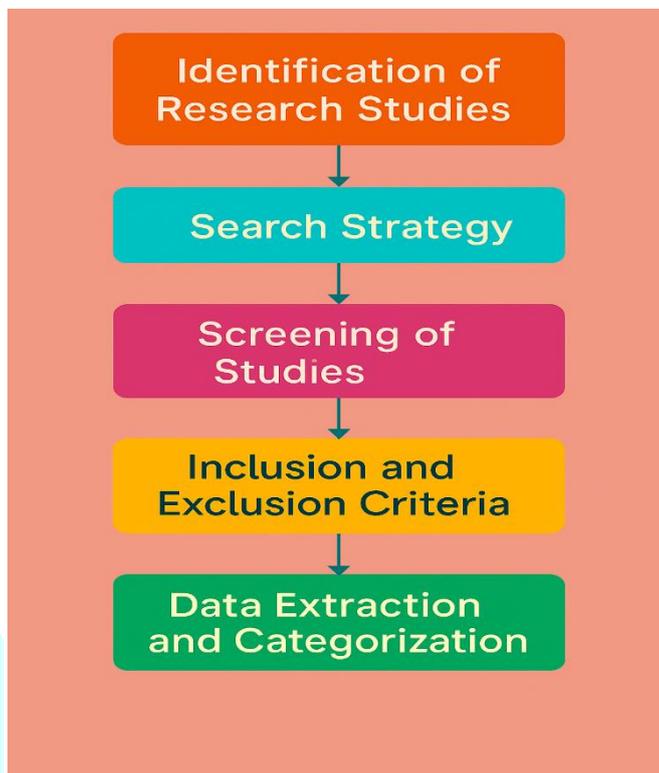
Figure 4.2

Source: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3844260

TABLE 4.1: SAMPLE SELECTION

ELECTRONIC DATABASE	Step 1	Step 2	Step 3	Step 4	SAMPLE
	No of articles	No of articles	No of articles	No of articles	
Emerald Insight	Over 2500	950	35	21	17
Taylor & Francis Online	25615	6900	13	5	4
OXFORD University Press	10514	3112	16	15	3
JSTOR	967	88	-	-	-
Total	**Over 39596**	**11050**	**64**	**41**	**24**

The chosen studies were divided into four main categories in order to provide an understandable and organized analysis:

1. Forensic Accounting Education

2. Models Introduced to Practice Forensic Accounting

3. Practical Implementation of Forensic Accounting

4. Review Articles on Forensic Accounting

TABLE 4.2: SAMPLE COMPOSTION

CATEGORY	NUMBER OF ARTICLES	PERCENTAGE
Forensic Accounting Education	5	21%
Models Introduced to Practice Forensic Accounting	7	29%
Practical Implementation of Forensic Accounting	6	25%
Review Articles on Forensic Accounting	6	25%
TOTAL	**24**	**100%**
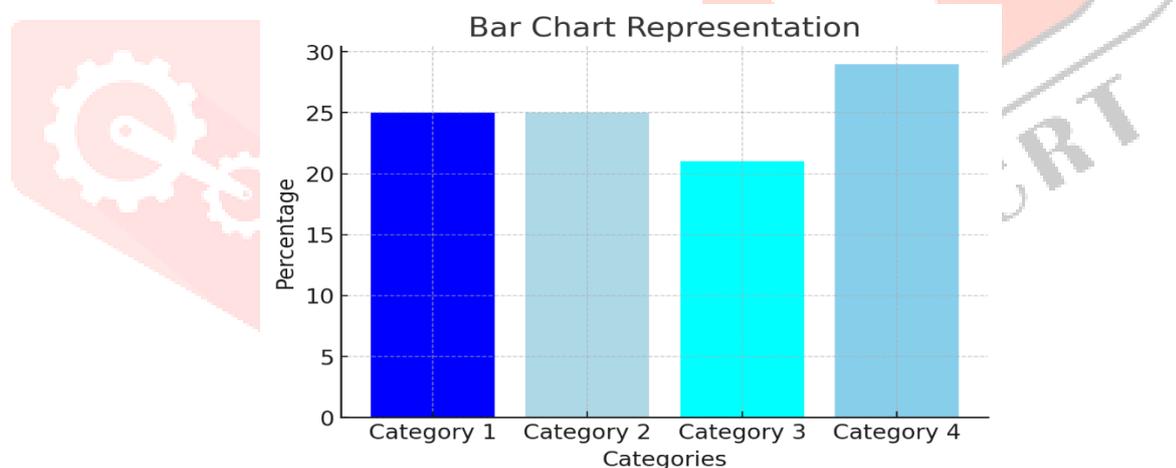
Chart no 4.1 - Sample Compostion

Sample Characteristics

The study's sample consists of 24 research articles selected based on specific eligibility criteria. The sample's characteristics were analyzed across three key dimensions: Year of Publication, Region, and Data Collection Method. This classification provides deeper insights into the distribution, geographical scope, and methodological approaches utilized in forensic accounting research.

Year of Publication

The selected research articles were published between 2020 and 2024, covering a four-year period. The distribution highlights trends in forensic accounting research, reflecting its evolving nature and increasing academic interest.

In 2024, the highest number of publications (41.6%) emerged, indicating the field's growing prominence. The second-highest was in 2023, with six studies (25%), reinforcing the rising trend.

Both 2022 and 2021 had three studies each (12.5%), showing a steady research flow, while 2020 had the least (8.3%), suggesting limited early interest.

These trends suggest a surge in forensic accounting research, likely driven by rising financial fraud, technological advancements, and regulatory demands for improved forensic auditing.

Data Collection Methods

Forensic accounting research employs two main data collection methods: primary and secondary.

Primary data involves firsthand collection through surveys, interviews, or direct observations, while **secondary data** utilizes existing sources like case studies, financial reports, and literature reviews.

Out of 24 studies, two (8.3%) combined both methods, integrating expert insights with case studies. Fourteen studies (58.3%) relied on secondary data, reflecting the field's dependence on

Historical fraud cases and financial records.

Meanwhile, **eight studies (33.3%)** used primary data, gathering perspectives from auditors, regulators, and forensic accountants.

While secondary data is preferred due to confidentiality and regulatory constraints, primary data remains essential for understanding practical fraud detection challenges.

5. PRISMA Model:

To ensure transparency and clarity in selecting research papers, this study follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework. PRISMA is a widely used approach for conducting systematic reviews, aiding researchers in identifying, screening, and organizing relevant studies. This methodology is particularly valuable in forensic accounting research, ensuring a rigorous selection process while minimizing bias.

Stages of PRISMA Flow Diagram

flowchart diagram
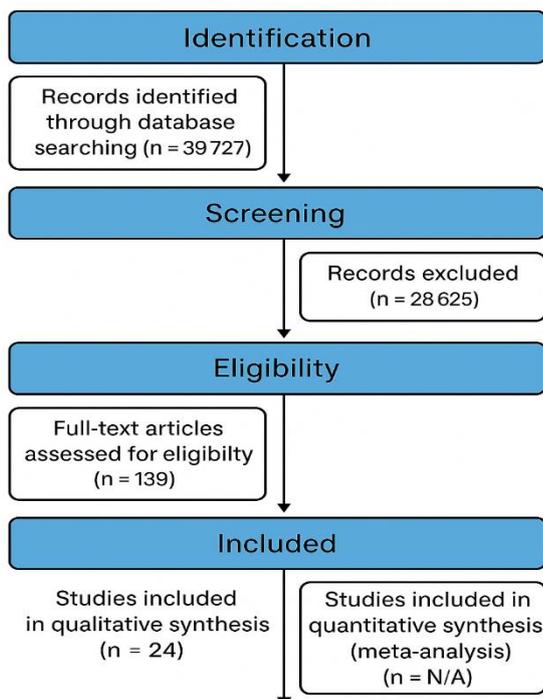
Forensic Accounting Education Integrated with AI: (5 Articles , 21%)

Table No 5.1

SL.NO	AUTHOR(S) AND YEAR	TITLE
1	Mohammed A.Alzahrane (2023)	Insights from forensic accounting educators and practitioners within the KSA context
2	Bartulović & Marić Stojan (2023)	Comparative analysis of formal education in forensic accounting
3	Hashem Al-Shurafat et al. (2024)	Obstacles facing the development of forensic accounting curricula in Australian universities
4	Narinthon Imjai et al. (2024)	Empowering Generation Z accountants with forensic accounting skills in the era of data complexity
5	Hashem Alshurafat et al. (2020)	Perceptions of the usefulness of various teaching methods in forensic accounting education

The table represents five key articles on forensic accounting education with AI, each contributing equally (20%). Alzahrane (2023) explores insights from KSA educators, while Bartulović & Marić Stojan (2023) compare global forensic accounting education. Al-Shurafat et al. (2024) discuss curriculum challenges in Australia, and Imjai et al. (2024) highlight the need for Gen Z accountants to develop forensic skills. Lastly, Alshurafat et al. (2020) analyze effective teaching methods in forensic accounting.

Models Introduced to Practice Forensic Accounting Integrated with AI: (7 Articles, 29%)

Table No 5.2

SL.NO	AUTHOR(S) AND YEAR	TITLE
1	Ahmed Mustafa Ali et al. (2024)	Forensic Accounting and Fraud Detection: Emerging Trends and Techniques
2	Lamprini Zarpala & Fran Casino (2021)	A Blockchain-based forensic model for financial crime investigation
3	F. Mario Andaru & Paradintya Utami (2024)	The Convergence of 5.0 and Forensic Accounting: Leveraging blockchains for corruption prevention
4	Annas Wasim Malik et al. (2024)	Cloud digital forensics: Beyond tools, techniques, and challenges
5	Anupam Verma & Veer Bahadur Singh (2024)	The Use of Data Analytics in Forensic Accounting: A review of current trends and techniques
6	Nejla Ellili et al. (2024)	Emerging trends in forensic accounting research: Bridging research gaps and prioritizing new frontiers
7	Oluwatoyin Esther Akinbowale et al. (2023)	The integration of forensic accounting and big data technology for internal fraud mitigation

The table represents seven key articles on forensic accounting models with AI, each contributing equally (14.3%). Ali et al. (2024) explore trends in fraud detection, while Zarpala & Casino (2021) propose a blockchain-based forensic model. Andaru & Utami (2024) highlight Industry 5.0's role in corruption prevention, and Malik et al. (2024) examine cloud digital forensics. Other studies discuss data analytics, research gaps, and big data integration in forensic accounting.

Practical Implementation of Forensic Accounting Integrated with AI: (6 Articles, 25%)

Table No 5.3

SL.NO	AUTHOR(S) AND YEAR	TITLE
1	Quang Huy Pham & Kien Phuc Vu (2024)	Digital forensic accounting and metaverse circular business model innovation
2	EzekielOluwagbemiga Oyerogba (2021)	Forensic auditing mechanism and fraud detection: The case of Nigerian public sector
3	Abdallah Kalaf Al-Raggad & Mishael Al-Raggad (2024)	Bibliometric study of forensic accounting and administrative law in the digital age
4	Stefan Milojević (2024)	Strengthening economic security: The essential role of forensic accounting
5	C.M. Ile & Ifeanyi Efanimjor (2024)	Forensic accounting skills needed by internal auditors for auditing in Nigerian universities
6	Kania Putri Kinanti et al. (2024)	Forensic Accounting: Preventing and Detecting Fraud – A Systematic Literature Review

The table presents six key studies in forensic accounting, each contributing equally (16.7%). Pham & Vu (2024) explore digital forensic accounting in the metaverse, while Oyerogba (2021) analyzes fraud detection in Nigeria's public sector. Al-Raggad & Al-Raggad (2024) conduct a bibliometric study on forensic accounting and administrative law. Milojević (2024) highlights forensic accounting's role in enhancing economic security.

Review Articles and Theoretical Studies on Forensic Accounting Integrated with AI: (6 Articles, 25%):

Table No 5.4

SL.NO	AUTHOR(S) AND YEAR	TITLE
1	Nejla Ellili et al. (2024)	Emerging trends in forensic accounting research: Bridging research gaps and prioritizing new frontiers
2	Peterson K. Ozili (2023)	Forensic accounting research around the world
3	Nourhene Guellim et al. (2024)	Evaluating the perceived value of forensic accounting: A systematic review
4	Stephen Owusu Afriyie et al. (2022)	Forensic Accounting: A Novel Paradigm and Relevant Knowledge in Fraud Detection
5	Majdi Alkababji et al. (2024)	Forensic Accounting Practices: Evaluating the Current Research
6	Nur Syuhada Adnan et al. (2024)	Forensic Accounting: Exploration of Trends and Themes via Bibliometric Analysis

The table showcases six key studies on forensic accounting trends, each contributing equally (16.7%). Ellili et al. (2024) highlight research gaps, while Ozili (2023) provides a global perspective. Guellim et al. (2024) assess forensic accounting's value, and Afriyie et al. (2022) explore its role in fraud detection. Additionally, Alkababji et al. (2024) review forensic accounting practices, while Adnan et al. (2024) analyze trends through bibliometric research.

6 .Conclusion

The balanced distribution of these studies highlights the comprehensive scope of forensic accounting research, spanning theory, practice, and bibliometric analysis. The findings emphasize its growing role in fraud prevention, economic security, and financial transparency, reinforcing its significance in academia and industry. While some forensic accountants fear AI may replace traditional methods, it should be seen as a complementary tool rather than a substitute for human expertise. To enhance trust and adoption, regulatory bodies should promote AI literacy among forensic accountants. The report highlights the urgent need for forensic models to address emerging cybercrime challenges. Advanced AI-driven strategies are essential for tackling crimes like cryptocurrency fraud and darknet transactions. Future research should focus on cyber forensic models integrating blockchain, AI, and digital forensics to prevent financial crimes.

References

1. **Abdullahi, R., & Mansor, N. (2018).** Fraud triangle theory and fraud prevention: Findings from forensic accountants. Journal of Financial Crime, 25(3), 545-561.
https://doi.org/10.1108/JFC-05-2017-0048
2. **Bhasin, M. (2020).** Integrating forensic accounting and artificial intelligence for fraud detection. International Journal of Business and Management, 15(7), 183-198.
https://doi.org/10.5539/ijbm.v15n7p183
3. **Dai, J., & Vasarhelyi, M. A. (2017).** Toward blockchain-based accounting and assurance. Journal of Information Systems, 31(3), 5-21.
https://doi.org/10.2308/isys-51804
4. **Hegazy, M., Sangster, A., & Kotb, A. (2017).** Mapping forensic accounting in the UK. Accounting Research Journal, 30(3), 298-316.
https://doi.org/10.1108/ARJ-11-2015-0130
5. **Omar, N., Said, J., & Johari, Z. (2016).** Corporate fraud prevention and detection: A study of forensic accountants' perception. International Journal of Economics and Financial Issues, 6(S7), 112-119.
https://www.econjournals.com/index.php/ijefi/article/view/2985
6. **West, J. (2019).** Machine learning in forensic auditing: Challenges and opportunities. Journal of Financial Regulation and Compliance, 27(2), 290-305.
https://doi.org/10.1108/JFRC-06-2018-0081
7. **Zhou, W., & Kapoor, G. (2011).** Detecting evolutionary financial statement fraud. Decision Support Systems, 50(3), 570-575.
https://doi.org/10.1016/j.dss.2010.08.007
8. **Rufai, A. S., & Isah, M. (2021).** Blockchain technology in forensic accounting: A pathway to financial integrity. Accounting and Finance Research, 10(3), 65-78.
https://doi.org/10.5430/afr.v10n3p65
9. **Chen, Y., & Yan, X. (2018).** Data mining techniques in forensic accounting: A systematic review. Expert Systems with Applications, 113, 118-133.
https://doi.org/10.1016/j.eswa.2018.06.023

10. **Yadav, S. K., & Singh, A. (2022).** AI-powered forensic accounting: Emerging trends and ethical concerns. Journal of Financial Crime, 29(4), 913-930.
https://doi.org/10.1108/JFC-12-2021-0275

11. **Guragai, B., Hunt, N. C., Neri, M. P., & Taylor, E. Z. (2017).** Accounting information systems and fraud detection: An examination of forensic accountants' perspectives. Journal of Information Systems, 31(3), 35-54.
https://doi.org/10.2308/isys-51802

12. **Rahman, M., & Anwar, S. (2020).** The future of forensic accounting in an AI-driven environment. International Journal of Accounting and Information Management, 28(2), 305-323.
https://doi.org/10.1108/IJAIM-12-2019-0151

13. **Abbasi, A., Albrecht, C., Vance, A., & Hansen, J. (2012).** Metafraud: A meta-learning framework for detecting financial fraud. MIS Quarterly, 36(4), 1293-1327.
https://doi.org/10.2307/41703508

14. **Wells, J. T. (2017).** Corporate Fraud Handbook: Prevention and Detection. John Wiley & Sons.
https://www.wiley.com/en-us/Corporate+Fraud+Handbook%3A+Prevention+and+Detection%2C+4th+Edition-p-9781119351986

15. **Albrecht, W. S., Albrecht, C. C., & Albrecht, C. O. (2019).** The role of forensic accountants in detecting fraud: A case study approach. Journal of Forensic and Investigative Accounting, 11(2), 148-163.
https://www.nacva.com/jfia

16. **Collins, J., & Lanza, R. (2010).** Detecting Fraud in Organizations: Techniques, Tools, and Resources. John Wiley & Sons.
https://www.wiley.com/enus/Detecting+Fraud+in+Organizations%3A+Techniques%2C+Tools%2C+and+Resources-p-9780470877721