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DETECTING FRAUDS IN FINANCIAL STATEMENTS: A COMPREHENSIVE LITERATURE REVIEW BETWEEN 2019 AND 2023 (JUNE)

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ABSTRACT

Purpose- The purpose of this study is to determine studies on detecting different types financial frauds, financial statement frauds and methods used in these studies. Financial statement fraud is one of the most common types of white-collar crime that has plagued various industries worldwide. It involves manipulating financial information in order to deceive stakeholders, such as investors and regulators, for personal gain or advantages. Financial statement fraud has significant implications for stakeholders, including investors, regulators, and the general public. Detecting fraudulent activities in financial statements is crucial for ensuring transparency, reliability, and trust in financial reporting.

Methodology- This paper presents a comprehensive literature review of studies focused on detecting frauds in financial statements in between 2019 and first half of 2023 inclusive on Science Direct.

Findings - The review encompasses a range of research articles, providing insights into various methodologies, techniques, and advancements in fraud detection. The findings of this review contribute to the understanding of fraud detection mechanisms in financial statements and inform future research directions in this critical area.

Conclusion - This paper presents a comprehensive literature review on the topic of detecting financial statement fraud, focusing on current trends and approaches employed in the field. By examining a wide range of scholarly articles, research studies, and industry reports, this review aims to provide an overview of the existing knowledge, methodologies, and tools utilized in the detection of financial statement fraud. In recent years, it has been observed that studies using machine learning in the field of fraud detection have increased.

Keywords: Fraud detection, machine learning, data mining literature review, financial statements
JEL Codes: M42, M21, M41

1. INTRODUCTION

Financial statement fraud can take many forms, including revenue recognition manipulation, understating or overstating expenses, manipulating cash flow statements, and misrepresenting assets or liabilities. Such fraudulent activities can have devastating effects on companies' reputations and lead to significant losses for investors and other stakeholders (Xiaoyu et al., 2018).

Financial statements form the core of external financial reporting by companies. It presents the company's financial position, performance, and cash flows to stakeholders. Therefore, they need to be accurate, reliable, and transparent (Dimitrijevic et al, 2021). Unfortunately, financial statement fraud is a growing concern in organizations worldwide. There have been prominent cases of financial statement fraud in recent years, such as Enron, WorldCom, Satyam, and Tesco. Financial statement fraud is the intentional manipulation of financial statements that distort the actual financial position of the organization for personal gain or to meet management's objectives. (ACFE Report, 2022; Xiaoyu et al., 2018).

Financial statement fraud poses a significant threat to the integrity of financial markets and the trust of investors. Detecting such fraudulent activities is crucial for maintaining transparency and ensuring accurate financial reporting.

According to the Association of Certified Fraud Examiners (ACFE), financial statement fraud is "a deliberate misrepresentation of the financial condition of an enterprise accomplished through the intentional misapplication of accounting rules, misrepresentation or omission of facts, or through fictitious transactions" (ACFE Report, 2022). Financial statement fraud is usually motivated by the desire of management to meet analyst expectations, inflate stock prices, and increase executive compensation (Mongwe et al., 2021). The most common methods used to commit financial fraud include: premature revenue recognition, understating expenses, capitalizing expenses instead of recording them as expenses, and hiding liabilities (Wang, 2010).

The consequences of financial statement fraud can be severe and long-lasting. Financial statement fraud can result in significant losses to investors, employees, and other stakeholders. Companies that engage in financial statement fraud typically suffer reputational damage, reduced market capitalization, legal sanctions, and failure. There are also social impacts, such as job losses, negative impacts on the overall economy, and trust in the financial reporting system.

2. SIGNIFICANCE OF FRAUD DETECTION IN FINANCIAL STATEMENTS

The importance of detecting financial statement fraud cannot be overstated as it helps prevent fraudulent activities before they cause severe damage to companies' reputation or finances. Early detection also saves resources that would have been expended during litigation processes that follow after fraudulent practices are discovered.

Preventing and detecting financial statement fraud requires a robust control environment, effective policies and procedures, sound ethical culture, and vigilant internal and external auditors. A well-designed internal control system with appropriate segregation of duties, sound internal audit functions, and independent external audit is critical to preventing and detecting financial statement fraud. Furthermore, companies need to have a code of conduct and ethics to promote ethical behavior and foster a culture of integrity (Simsek et al., 2018).

The effects of financial statement fraud on a company and its stakeholders can be devastating. The followings can be given as examples (Roszkowska, 2020; Bauer et al. 2020; Simsek et al., 2018; Wang, 2010):

- ✓ *Loss of investor confidence:* The discovery of financial statement fraud can shake investor confidence in a company and lead to a significant drop in stock prices.
- ✓ *Legal consequences:* Companies that engage in financial statement fraud may face legal consequences, such as fines and penalties from regulators or lawsuits from investors.
- ✓ *Damage to reputation:* Financial statement fraud can severely damage a company's reputation, leading to a loss of business and difficulty in attracting new customers.
- ✓ *Deterioration of relationships:* Financial statement fraud can also damage the company's relationships with its partners, vendors, and suppliers, leading to further negative impacts on the company's business.
- ✓ *Job losses and decreased employee morale:* If the company's financial situation deteriorates due to financial statement fraud, it may result in layoffs, decreased compensation, and lower employee morale.

The manipulation of financial statements can have significant impacts on both investors and financial institutions. When financial statements are manipulated, they may present a distorted or inaccurate picture of a company's financial health and performance. This can mislead investors and cause them to make uninformed investment decisions based on false information. As a result, investors may suffer financial losses if they invest in companies with manipulated financial statements.

Financial institutions, such as banks and lending institutions, rely on accurate financial statements to assess the creditworthiness and risk profile of companies. Manipulated financial statements can lead to incorrect assessments of a company's financial stability, potentially resulting in loans or credit being extended to companies that are actually at higher risk of default. This can expose financial institutions to increased credit risk and potential losses (Thennakoon et al., 2019).

Overall, the manipulation of financial statements undermines the integrity and transparency of financial markets, erodes investor confidence, and poses risks to the stability of financial institutions. It is therefore crucial to detect and prevent financial statement fraud to protect the interests of investors and maintain the soundness of financial systems.

It's important for companies to have strong internal controls and ethical standards to prevent financial statement fraud from happening in the first place.

Financial statement fraud remains a significant concern in organizations worldwide. Companies that engage in financial statement fraud not only face severe legal and financial consequences but also harm their reputation and stakeholders. To prevent and detect financial statement fraud, organizations need to establish robust internal control systems, effective policies and procedures, sound ethical culture, and vigilant auditors. Therefore, it is essential for organizations to focus on ensuring integrity and transparency in their financial reporting practices, which can ultimately benefit all stakeholders involved.

The objectives of this study are, to provide an overview of the existing research on detecting frauds in financial statements and to identify research gaps and opportunities for future investigation. This way, it is aimed to provide these acquisitions, to give readers a perspective and to provide them with information about fraud detection.

3. METHODOLOGY

This study tries to utilize a combination of bibliometric analysis and topic modeling approach to conduct an in-depth examination of relevant articles from the selected references within the stated time frame. Researh Definition is the first phase in which Research Area is defined, Review Research's Aim is formulated and Research Scope is identified. The second phase is Research Methodology where after defining the scope the online search through digital libraries and final result filtration are done. As the last phase, Research Analysis is conducted with the analyzing of the selected articles and constitution of results and conclusion (Al-Hashedi and Magalingam, 2021).

The searches were done on the ScienceDirect website (www.sciencedirect.com) with the keywords provided in Table 1, between the publications that were published between 2019 and 2023 (June 19th), inclusively, . The numbers of the papers listed as a result are shown next to the related keywords. While we focus on the Financial Statement Fraud in this research, we also enhanced our research on determining the categories of which most of the Fraud Detection studies are done and also the models which are used most for Fraud Detection.

In this study, the words used for searches on issues involving fraud and the words used in searches regarding the methods used to detect fraud are given in Table 1.

Table 1: Search keywords

Issues Involving Fraud	Methods Used to Detect Fraud
Fraud + Detection + "Financial Statement"	Fraud + Detection + "Machine Learning"
Fraud + Detection + "Credit Card"	Fraud + Detection + "Data Mining"
Fraud + Detection + "Fintech"	Fraud + Detection + "Artificial Intelligence"
Fraud + Detection + "Insurance"	Fraud + Detection + "Heuristic"
Fraud + Detection + Audit	Fraud + Detection + "Fuzzy"
Fraud + Detection + Banking	Fraud + Detection + Optimization
Fraud + Detection + "e-Commerce"	Fraud + Detection + "Deep Learning"
Fraud + Detection + "Bank Transaction"	

The selected papers are analyzed to find which methodologies and models are used to detect frauds in financial statements. The papers are summarized especially with these information and also their results and additional findings.

4. APPLICATION

The findings reveal several studies conducted by researchers globally with diverse backgrounds ranging from accounting experts, computer science professionals among others who contributed significantly to detecting financial statement fraud through their works across different fields; these studies include both qualitative and quantitative methods conducted using secondary data sources such as annual reports provided by firms themselves related publications among others which were analyzed thoroughly with varied results obtained.

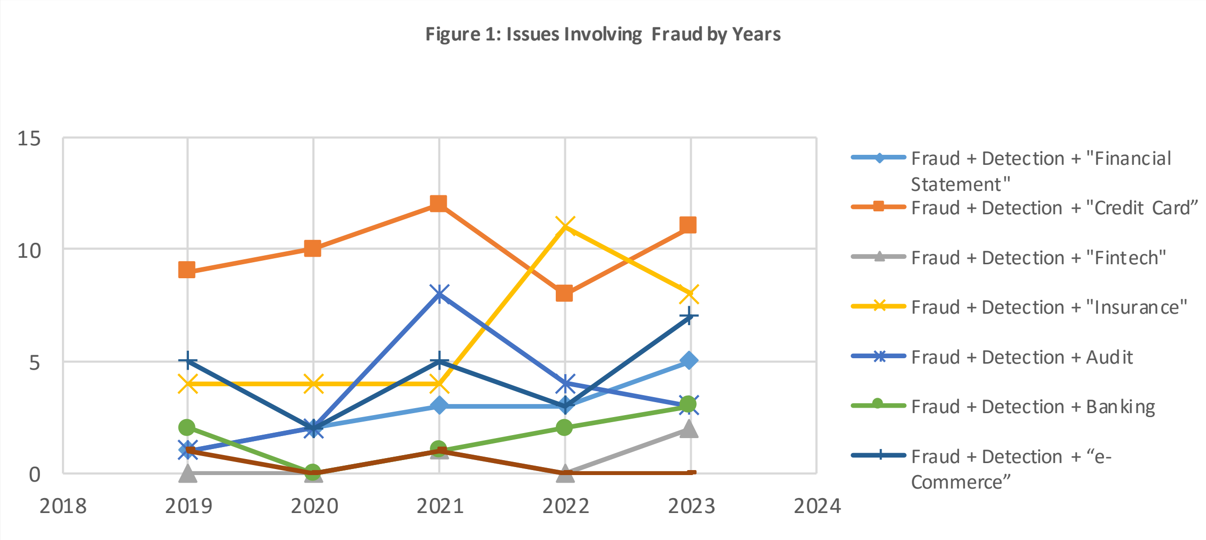
The article numbers were found in Science Direct (www.sciencedirect.com) by the search in between 2019 and 2023(June) publishment years, with the keywords shown in Table 1. During these years there have been increasing in the publishment numbers. The most studies are done about the credit card transactions and insurance frauds.

Financial Statement Frauds also show an increasing tendency through years; in the first half of 2023 there have been 5 publications in this area on ScienceDirect while there was only 1 publishment in 2019.

Fraud Detection Papers Grouped by Fraud Topics are provided in Table 2 and Figure 1.

Table 2: Fraud Detection Papers Grouped by Issues

Issues Involving Fraud	2019	2020	2021	2022	2023
Fraud + Detection + "Financial Statement"	1	2	3	3	5
Fraud + Detection + "Credit Card"	9	10	12	8	11
Fraud + Detection + "Fintech"	0	0	1	0	2
Fraud + Detection + "Insurance"	4	4	4	11	8
Fraud + Detection + Audit	1	2	8	4	3
Fraud + Detection + Banking	2	0	1	2	3
Fraud + Detection + "e-Commerce"	5	2	5	3	7
Fraud + Detection + "Bank Transaction"	1	0	1	0	0
Fraud + Detection	76	115	151	139	102

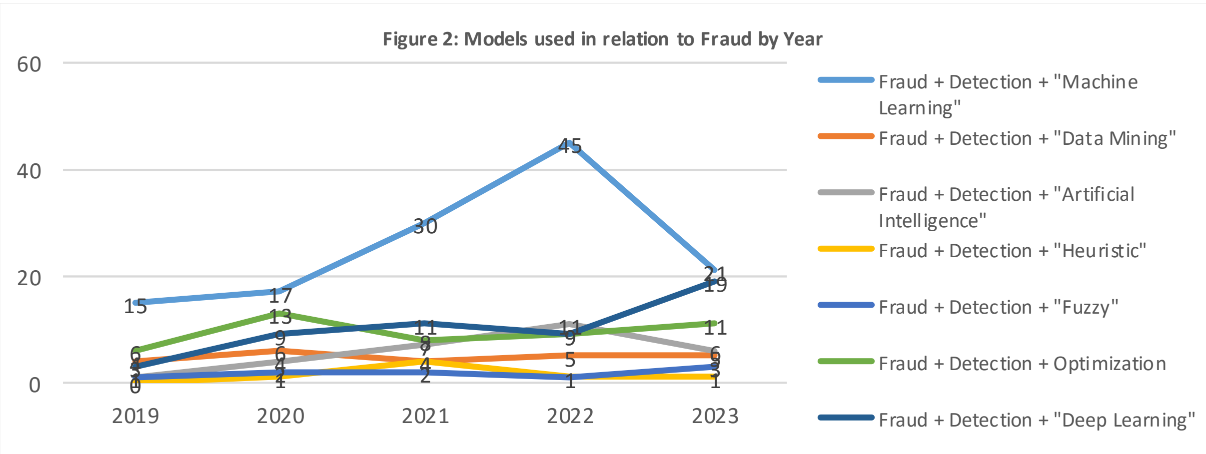


Recently, the most of the researches about "Fraud Detection" have been in Credit Card and Insurance issues.

Fraud Detection Papers Grouped by Fraud Detection Models Used are provided in Table 3 and Figure 2.

Table 3: Fraud Detection Papers Grouped by Models Used

Methods Used to Detect Fraud	2019	2020	2021	2022	2023
Fraud + Detection + "Machine Learning"	15	17	30	45	21
Fraud + Detection + "Data Mining"	4	6	4	5	5
Fraud + Detection + "Artificial Intelligence"	1	4	7	11	6
Fraud + Detection + "Heuristic"	0	1	4	1	1
Fraud + Detection + "Fuzzy"	1	2	2	1	3
Fraud + Detection + Optimization	6	13	8	9	11
Fraud + Detection + "Deep Learning"	3	9	11	9	19
Fraud + Detection	76	115	151	139	102



Most of the studies on Fraud Detection are the ones which use machine learning models with a big difference to other models. Deep learning is also in an increasing trend while heuristic and fuzzy models are being used least.

5. CONCLUSIONS

This paper has provided an overview of literature on detecting financial statement fraud from 2019 to first half 2023 while highlighting different approaches/methodologies employed by researchers globally to identify fraudulent behavior using different datasets.

The research articles reviewed highlight different approaches used in detecting financial statement frauds over the years. These articles reveal that various methodologies are used in detecting financial statement fraud; these methods include statistical analysis, machine learning models, neural networks among others.

Detecting fraud in financial statements is a very important issue. Recently, many academic studies have been conducted using machine learning methods for this fraud detection. With this study, we tried to draw a general framework about the studies that have been done on this subject in the recent period and tried to provide information about the existing studies and what can be done for future studies.

Overall findings from this literature review suggest that significant advancements have been made concerning detecting financial statement fraud over the past few years using various methodologies highlighted above which could be improved by increasing awareness amongst auditors to improve their detection skills or incorporation of model-based decision making based on AI/ML algorithms.

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