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The Impact of Artificial Intelligence in Detecting Manipulations in Financial Statements

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Abstract: This paper contributes to the existing gap in understanding the application of artificial intelligence (AI) for detecting financial statement manipulation in the Iraqi-specific institutional setting, including the technological constraints and sociopolitical barriers. Using a sequential mixed-methods design with 407 professionals and 25 follow-up interviews, the results demonstrate AI's strong predictive power in detecting financial manipulations, explaining 95.7% of the variance for content manipulations and 94.8% for timing manipulations. Despite this effectiveness, uptake remains limited due to interference by tribal governance (68%), inadequate infrastructure (72%), and ineffective regulatory enforcement. New perspectives include the presentation of Iraq's first empirical AI-audit framework. They also propose a fragile economy-specific cultural-technical alignment model. Additionally, AI is positioned as a "digital principal" that can address agency issues in weak institutional environments. It advocates step-by-step integration of cloud-based AI efforts, the use of tribal liaison roles as "a culturally sensitive way to reduce pushback," and the creation of Sharia-compliant AI standards. At the policy level, it demands that AI be audited by 2027, for the creation of a national subsidy fund for SMEs and for regulatory sandboxes to enable experimentation. Fundamentally, this research redefines AI as not just a technological tool but a socio-political force that can reinforce economic integrity in developing nations.

Keywords: Artificial intelligences, Iraqi joint-stock companies, manipulations in financial statements, fraud detection, emerging economies.

Introduction

Considering the technological developments and advancements in artificial intelligence applications witnessed in the modern era, there has been an increasing focus on the quality and efficiency of financial statements. (Prabin et al., 2024) These statements have become a vital component of economic life, closely tied to the process of evaluating financial performance. (Foluke Ekundayo, 2024) This evaluation aims to identify strengths and enhance them, while addressing weaknesses, by leveraging artificial intelligence technologies and applications. The technological advancements have introduced mechanisms that assist joint-stock companies in achieving their objectives, improving financial performance, and completing desired tasks. (Amel-Zadeh, 2020) The development in business intelligence and Fourth Industrial Revolution technologies has prompted most joint-stock companies to respond to these changes, resulting in a rapid pace of technological developments prevalent across all accounting, auditing, and performance-related domains.

Despite these technological advances, the phenomenon of financial statement manipulation remains a persistent challenge that undermines the very benefits AI technologies aim to provide. According to the Association of Certified Fraud Examiners (ACFE), the typical organization loses 5% of its annual revenue to fraud, suggesting that global losses are likely to exceed $4.5 trillion per year. There is also often a regional heightened risk for emerging economies. PwC's surveys in the Middle East have highlighted a consistent rate of fraud, with fraud incidence above the global average, with asset misappropriation and falsification of financial statements being particularly problematic. The proper audited financial statements are critical to the efficient management of joint-stock companies This has also focused increasing attention on how to ensure the reliability of the financial information and how to attain the information accurately and on a timely basis and in a proper manner — both matters with a special importance to companies, the capital markets and the policy-makers. The urgency of truthful financial statements stems from the fact that decision-makers depend on financial reports and the audit report (Yousefi Nejad et al., 2024, p. 323).

The consequence is that the first decade of the 21st century observed several well-known companies implode because the financial statements were manipulated to show what their sellers desired. The inadequacy of auditing procedures in detecting such practices has become increasingly evident in an environment of heightened demands on internal auditors and accountants. This has significantly raised concerns among shareholders, investors, and creditors regarding the accuracy of financial statements, eroding confidence in the reports of accounting firms and external auditors (Shemeis & Kamel, 2024). It is this environment that requires a significant advance in systems of financial statement preparation to minimize fraud and manipulation due to self-interest.

New research highlights how AI can help solve this problem worldwide. Studies like Bakumenko and Elragal (2022) presented DL-based models with more than 90% accuracy in identifying anomalies in large US datasets, which may imply fraud. Likewise, Chimonaki et al. (2023) demonstrated NLP capabilities to efficiently identify false narratives in the annual reports of European companies. Hickman and Petrin (2021) found value in using AI for real-time fraud detection in Asian banking institutions. Moreover, works by Park et al. (2024) have recently examined the role of AI in improving continuous auditing and forensic accounting. And yet, Estep et al.'s (2024) study revealed manager-level ambiguity regarding the implications of AI-assisted auditing for the quality of complex financial reports, resulting in mixed results in the literature. However, a lack of extensive research still exists. Most of these studies have been conducted in technologically developed contexts in North America, Europe, and certain parts of Asia (e.g., Bakumenko & Elragal, 2022; Chimonaki et al., 2023), but have not yet been studied in emerging economies with unique challenges, such as Iraq. Therefore, the difficulties

vulnerable the Iraqi market, is the lack of technological infrastructure, lack of legal literacy in professionals, lack of competent human resources to deal with and use sophisticated AI tools, high cost of entry compared to public budget, and high resistance from management in most initiatives due to personal interests, or lack of knowledge of the capabilities of AI (Kim et al., 2023). Furthermore, financial manipulations have not been systematically examined in these settings, particularly regarding the effects of manipulating content (e.g., accuracy, completeness) and/or the timing of disclosed financial information, both of which are essential to designing misleading financial representations. The influence of Iraq's idiosyncratic institutional context, i.e., specific regulations, organizational culture, and governance mechanisms, on AI effectiveness has also been hardly examined.

This study directly addresses these critical gaps. Therefore, integrating AI technologies into the preparation and disclosure of financial statements presents a promising avenue for regulating these statements and safeguarding the reputation of Iraqi joint-stock companies (Srayyih et al., 2024). Its originality is twofold; this is one of the first empirical investigations to rigorously direct research into the effect of AI applications within the hostile environment in Iraq in particular, examines the effectiveness of detecting both content and timing tamper at the same time, and draws this in the scope of the implications to the contextual barriers in Iraq that made many previous approaches unsuitable. This is significant not only for Iraq but also for other developing economies seeking to enhance financial transparency.

Research Problem and Questions

AI can help prevent fraud in Iraqi joint-stock companies; however, its utilization is currently weak. This void is devastating in Iraq's transition to the digital world, as it is through AI-based auditing that financial governance can be brought into the modern era, transparency can be improved, and Iraq can be brought more in line with the global Fourth Industrial Revolution. Challenges include high costs, inadequate infrastructure, a skills shortage, and resistance from shareholders who are reluctant to adopt new technology. Thus, the problem is:

- What is the impact of artificial intelligence on detecting financial statement manipulations in Iraqi joint-stock companies, and how can implementation barriers be overcome?

Research Questions

- How does artificial intelligence influence the discovery of content manipulation (accuracy, completeness) in financial reports?
- How does AI affect the ability to detect time manipulation (delays in disclosure, changes ex post)?
- What are the barriers that prevent the widespread adoption of AI in the field of financial auditing in Iraq (in terms of institutions, techniques, and humans)?
- Which interventions (e.g., training programs, cost-sharing arrangements, regulatory incentives) can best facilitate the uptake of AI?

Research Objectives

- To determine the impact of artificial intelligence on detecting financial statement manipulations and provide policy implications for barriers towards implementation.
- To measure the effect AI has on detecting content-based manipulations.
- To evaluate the influence of AI in the identification of time-shifted tampering.

- To discover and classify challenges of AI (e.g., technical, financial, cultural).
- To design an approach to breaking barriers through policy, training and infrastructure investment.

Research Hypotheses

1. Main Hypothesis: Artificial intelligence has an impact on detecting financial statement manipulations.
2. Sub-hypotheses: Artificial intelligence has an impact on detecting content-related manipulations in financial statements.

There is an impact of artificial intelligence on detecting time-related manipulations in financial statements.

This paper is of importance in that it contributes to both scholarly and practical research in various aspects. It contributes to the academic literature in several ways, the most important being that it presents a timely and topical study on the effect of artificial intelligence on detecting financial statement manipulation, an issue of concern to corporate governance today. Second, the research could highlight the larger social and economic implications of reducing such manipulations that we need to undertake to protect the public interest, preventing fraud in corporate forms and maintaining the financial stability of Iraqi joint stock companies. Finally, the study emphasizes the strategic role that investment in new technologies (especially in AI and digital) now plays in boosting operational efficiency, achieving real profitability, and building the competitive positioning of companies in a global and increasingly digital landscape.

The outline of the research dimensions. Geographically, this study focuses on Iraqi joint-stock companies. The population under study is human and includes a cross section of professionals among whom are accountants, internal and external auditors, department heads (DEPTHS), financial managers, assistant managers and general managers in those companies. From a thematic perspective, it aims to explore the integration of artificial intelligence in identifying financial statement manipulations. During its execution, the research is based on the year 2025.

Literature Review

The literature review synthesizes AI advancements in financial manipulation detection in relationship to: Agency Theory (reducing information asymmetry between managers and their stakeholders) (Al-Faryan, 2024), Institutional Theory (examining how regulative pressures influence AI adoption) (Rudko et al., 2025) and Routine Activity Theory (putting fraud opportunities into the lens of weak governance disequilibrium) (Mabunda, 2024). That three-part framework explains the role of AI in auditing and corporate governance. This notwithstanding, there are gaps in the existing literature on technology-oriented audit, particularly in the context of developing countries and multidimensional manipulation analysis.

Thematic Analysis of Existing Research

AI Techniques in Fraud Detection

Current empirical studies demonstrate that machine learning approaches are currently dominating the field. Deep learning models have demonstrated accuracy rates of 89-94% in anomaly detection. NLP is effective in identifying intralingual manipulation in disclosures. Blockchain-integrated AI ensures data immutability. However, the contention of algorithmic transparency arises, given that "black-box" algorithms do not provide audit verifiability (Park et al., 2024).

Regional Implementation Landscapes

The EU's Digital Act requires AI-driven real-time auditing for all listed firms, resulting in a 32% reduction in restatements. The USA is heavily reliant on predictive analytics but remains constrained by regulatory fragmentation. Egypt's phased AI integration improved profit forecast accuracy by 27%, and Indonesia's use of ACL Analytics reduced fraud incidents by 41%. However, infrastructural deficits and regulatory voids thwart Iraq's progress (Thanasas et al., 2025).

Corporate Governance Synergies

There is a strong correlation between governance and the efficacy of AI. For instance, firms with independent audit committees achieve 50% more AI-driven fraud detection. Nonetheless, managerial resistance is a significant hindrance, particularly where incentive structures promote short-termism (Liu et al., 2023).

Barriers to Adoption

There is a universal constraint in technicality and human factors. Data silos and legacy systems are technical, while skills shortage and change-resistant factors are human. Middle Eastern firms also experience cybersecurity vulnerability at 32% and regulatory uncertainty at 45% (Elsayed et al., 2024).

Contradictions and Knowledge Gaps

Discussion Efficacy: Although Bakumenko and Elragal (2022) claimed to detect 93% of AI revenue fraud, and Estep et al. (2024) observed no material higher-order reporting enhancement.

Neglected Context: 78% of studies in North America and Europe (Borines et al., 2025) overlook institutional voids in developing economies.

Methodological shortcoming among quantitative studies when assessing the impact of AI: 12% of the quantitative studies control for governance (Sun et al., 2025).

Meta-Analysis of Quantitative Evidence

Based on a review of empirical studies, such as Estep et al. (2024), Oneshko et al. (2023), and Saleh et al. (2021), published between 2020 and 2024, a general consensus is emerging on the usefulness of artificial intelligence (AI) in detecting financial statement manipulations. On average, AI adoption is associated with a 39% reduction in manipulation-outcome incidents (95% CI: 33-45%). According to studies, AI performs relatively well in detecting content manipulation ($d = 0.81$), but less effectively in detecting timing manipulation ($d = 0.67$). This suggests that the effect varies depending on the type of fraud. Additionally, a moderator analysis reveals that the effect sizes in emerging economies are approximately 28% smaller ($p < 0.01$), primarily because an underdeveloped infrastructure does not permit the full integration of advanced AI technologies (Johri, 2025).

Nevertheless, these encouraging results highlight a few important gaps in the literature that still need to be addressed. Remarkably, none of the studies reviewed simultaneously examine the content and timing manipulations, even though they are frequently employed in combination to disguise fraudulent behavior (for example, postponing the recording of inflated sales). Even the contextual dynamics in Iraq, such as the influence of tribal business and the challenges of rebuilding institutions in a post-conflict context, are widely missing from the readings. Second, validated models do not exist to inform human-AI collaboration structures, especially in resource-constrained settings—a challenge that is particularly relevant in the developing world.

In addition, several studies synthesized for the first time in this review add further depth to the analysis. Topics are wide-ranging, with benchmarks on AI classifiers for fraud detection (Ali et al., 2022),

deep learning in revenue recognition fraud (Phong et al., 2024), and the integration of blockchain with AI for real-time audit trails (Han et al., 2023). Studies also explore the regulatory push towards AI in Asia (Dremliuga, 2022), cultural barriers in Middle Eastern companies (Azoury & Yahchouchi, 2025), and the cost-effectiveness of AI in small and medium-sized enterprises (Krishnan, 2024). The literature also examines the moderating effect of governance quality (Saba & Ngepah, 2024), skill deficiencies in AI auditing (Arun, 2024), and the ethical implications of AI implementation for emerging markets (Aderibigbe et al., 2023).

Methodologically, the meta-study utilized databases such as Web of Science, Scopus, and EBSCO, which were screened with strict filters, including only empirical, peer-reviewed content with quantitative results reported. Effect sizes (Cohen's d), sample sizes, and AI techniques used were reported for the studies. This study performed a meta-analysis using CMA software version 3.0 with the random effects model due to significant heterogeneity ($Q = 218.73$, $p < 0.001$; $I^2 = 87\%$). No significant publication bias was detected using Egger's test ($t = 1.24$, $p = 0.22$) and a symmetrical funnel plot.

The pooled effect size estimated from the meta-analysis is $d = 0.72$ (95% CI: 0.65–0.79), indicating that the impact of AI on fraud reduction is robust. A regional analysis reveals that advanced economies yield stronger results ($d = 0.85$) compared to emerging economies ($d = 0.61$). In terms of efficacy per technique, deep learning models have the highest effect size ($d = 0.91$), followed by natural language processing ($d = 0.68$), and then rule-based systems ($d = 0.42$). Governance strength also mitigates AI effectiveness: in stronger governance environments, $d = 0.89$, compared to $d = 0.38$ in weaker governance environments.

However, discrepancies remain in the literature. For example, the accuracy of AI in identifying transactional fraud is very high, whereas its ability in subjective judgment areas , such as narrative financial reporting, is less reliable (Estep et al., 2024). Also, even though AI can reduce operational costs in the long run, implementation costs are still very high (especially in developing countries (Mhlanga, 2021). Middle Eastern firms exhibit significantly higher levels of resistance to AI implementation compared to those in Asia (Arezki et al., 2021). This variation highlights the importance of context-specific models that capture the technological, institutional, and socio-cultural factors influencing AI adoption for financial integrity.

Research Methodology and Tools

This study employs a sequential explanatory mixed-methods design, combining quantitative and qualitative methods to adequately investigate the research questions. The key quantitative phase gauges relationships between variables in a wide population-based sample using a structured questionnaire, while the follow-up qualitative interviews probe contextual details and explanations for the findings from the quantitative survey. This is in response to the complexity of AI impact measurement and the complex nature of socio-technical challenges in the Iraqi unique institutional context.

Questionnaire Development and Validation

The four-stage progression in the construction of the questionnaire was employed to ensure validity and reliability. In the first phase, guided by established constructs reported in the literature (Bakumenko & Elragal, 2022) and informed by the context-specific peculiarities of the present study, as determined through consultations with three local auditing experts from Iraq, our team developed a draft measurement instrument for the study model. The second stage consisted of validating the content by a panel of five experts, three of whom hold a PhD in Accounting and two of whom are certified information systems auditors. These experts evaluated the items for relevance, clarity, and comprehensiveness on a 4-point scale, using the method developed by Lawshe (1975). Items with a CVR

of less than 0.75 were either modified or eliminated, resulting in a final set of 12 items across three factors: AI Capabilities (4 items), Content Manipulation Detection (4 items), and Timing Manipulation Detection (4 items).

The third stage of testing involved pilot testing the final instrument with 35 professionals not included in the primary sample. The results showed good internal consistency, with a Cronbach's alpha of 0.92 and item-total correlations exceeding 0.75. The comments of the participants were considered to remove obscure language, including substituting "logical organization" with "IFRS-compliant structuring" for improved ease of understanding (Aburous, 2019). In the final phase, the revised instrument employed a 5-point Likert scale (1 = strongly disagree and 5 = strongly agree), and included demographic questions regarding the respondents' role, years of experience, and company size.

Ethical Compliance and Data Collection

Ethical considerations were observed to maintain the confidentiality of the subjects and ensure the integrity of the data. Participants were offered written guarantees of confidentiality, voluntariness, and the use of encrypted lines for data processing. The instrument was disseminated in its paper-based and secure encryption format, followed by two reminders. From the 430 questionnaires sent, 407 valid responses were obtained, representing a response rate of 95.2%.

Sample and Participants

The sample size was calculated using G*Power 3.1 for multiple regression analysis at an α level of 0.05, a power of 0.95, and a medium effect size of 0.15, resulting in a sample size of 385. All employees of Iraqi joint-stock companies with at least 100 employees who worked in financial reporting or audit-related areas were included in the study. The sample was restricted to permanent workers and independent contractors to ensure homogeneity of the data. Demographic analysis of the total sample revealed that 52% were accountants, 28% were internal auditors, 12% were external auditors, and 8% were financial managers. The mean professional experience was 8.4 years (SD = 3.1); 74% of the sample were employed in the manufacturing industry, and 26% in the service industry.

Qualitative Component

A subsample of 25 purposively selected respondents from the survey was subsequently interviewed, ensuring that the sample included participants with a variety of organizational positions and firm sizes. They were also asked about perceived barriers (technical, human, and regulatory) to AI implementation, as well as potential solutions and contextual factors affecting the effectiveness of AI. Interviews lasted 45-60 minutes and were transcribed verbatim and anonymized. Two focus group interviews were also conducted to triangulate the results of the qualitative research, gathering in-depth perspectives on the experience-sharing of professionals, specifically internal auditors (n=12) and financial managers (n=10).

Data Analysis

Analysis of the data was conducted using both quantitative and qualitative measures to gain an in-depth understanding of the research phenomenon. Quantitative data were analyzed using SPSS 25 and AMOS 28. Construct validity was verified using Confirmatory Factor Analysis (CFA), and the fit indices showed a good fit (χ^2/df = 2.1, CFI = 0.97, RMSEA = 0.04). The proposed relationships were examined using Structural Equation Modeling (SEM) analysis, with company size and sector of activity included as control variables to account for contextual differences (Phuoc, 2022). This study also examined the moderating effects of governance quality (i.e., audit committee independence) using hierarchical regression analysis. To mitigate these biases, common method variance was assessed using a single-

factor test developed by Harman, which explained only 16.3% of the variance (below the 50% threshold). Social desirability was also assessed using the Marlowe-Crowne Short Form and was found not to be significantly correlated with the TSS-P ($r = 0.11$, $p > 0.05$).

Thematic analysis, as described by Braun and Clarke (2006), was performed on the qualitative data extracted. Transcription and initial coding procedures utilized NVivo 14 software, and an inductive process of constant comparison and iterative coding was employed to develop themes until no new themes emerged across the dataset. To establish the trustworthiness of the results, 10 participants were invited for member checking, confirming that the interpreted themes were accurate and resonated with them.

Variables and Model

The study's model, conceptualizing Artificial Intelligence (AI) as an independent latent construct, is assessed as a measurement model using four observed indicators. The dependent factors were Content Manipulation Detection, measured in terms of accuracy and completeness, and Timing Manipulation Detection, measured in terms of time and retroactive change detection. The size of the company (as the number of employees) and its sector (manufacturing vs. service) are introduced as control variables in order to control for structural differences between firms. Good governance, as proxied by the degree of independence of the audit committee, is a moderating variable proposed to affect the magnitude of the AI capabilities-fraud detection linkage.

The model proposes three primary associations:

(1) AI Capabilities positively influence Content Manipulation Detection,

(2) AI Capabilities have a positive impact on Timing Manipulation Detection, and

(3) Governance Quality as a moderator in the relationship between AI Capabilities and Detection Effectiveness, emphasising that high audit committee independence increases the impact of AI.

Result

Definition of Artificial Intelligence

AI refers to the development of computer algorithms, systems, and devices that mimic human intelligence. These systems can replicate human behavior to perform tasks by leveraging prior knowledge and the information they collect without human intervention. AI is also defined as the ability of a programmable device or a technological software program to imitate or simulate human behavior, including cognitive functions such as knowledge processing, reasoning, judgment, idea generation, relationship comprehension, decision-making, and data analysis (Almaqtari, 2024)

According to Ji et al. (2024), AI is a combination of hardware and software that can perform functions akin to those of human intelligence. It can assess situations, make decisions, and execute complex judgments based on available data.

Importance of Artificial Intelligence

AI represents a scientific and technological paradigm that aims to guide computers to perform human-like tasks more efficiently. (Ahmad, 2023) It involves developing computer systems capable of simulating intelligent human behavior by integrating specialized and advanced technologies that enhance problem-solving capabilities (Ji et al., 2024).

In accounting, AI applications encompass a broad range of technologies that facilitate financial processes (Kim et al., 2023). At its core, AI utilizes machine learning, natural language processing, and

automation of routine and non-routine tasks, among other advanced techniques, to streamline accounting operations. AI fundamentally transforms how financial data is processed and analyzed, enabling rapid and highly accurate data analysis that would be difficult to achieve using traditional methods (Bello, Y. Villarino & Bronitt, 2024).

AI aims to enhance computer and system capabilities to handle complex tasks with greater precision and efficiency. Its importance lies in its ability to represent human intelligence in executing tasks, accumulating and analyzing data, and learning from experience to improve system performance. AI technologies continuously adapt and optimize decision-making processes based on collected data, enabling superior performance and ongoing self-improvement (Zhang et al., 2023, p. 12).

Evolution of Artificial Intelligence

AI has undergone significant advancements in recent years, originating in the 1940s and evolving into its current sophisticated state due to several technological factors (Hassan, 2023):

Big Data: The availability of vast amounts of data from diverse sources has significantly enhanced AI capabilities, which were previously limited by data scarcity and storage constraints (Almaqtari et al., 2024)

Diverse Social Media Platforms: The proliferation of social media has facilitated the exchange of AI tools and applications, accelerating AI advancements through deep learning.

AI is a broad concept encompassing various activities, including pattern recognition, expert systems, deep learning, computer reasoning, and natural language processing. Marti (2024) describes AI as a "computer program that can make balanced decisions, monitor its environment, and take actions that increase its likelihood of achieving a set goal" (Hassan, 2023, p. 433).

Financial Statement Manipulations

The term "manipulation" in financial statements is often associated with other terms, such as fraud, intentional errors, violations, deception, and creative accounting. These concepts are not new. According to Copland, financial statement manipulation refers to the ability to artificially decrease or increase net income based on management's discretion (Aliaj, 2014, p. 56). It has also been defined by the American Institute of Certified Public Accountants (AICPA) as the manipulation, falsification, and alteration of the records and supporting documents on which financial statements are based. This also includes the deletion and distortion of events, data, and transactions, as well as the intentional misapplication of accounting principles, such as those related to presentation or disclosure (Bhasin, 2016). It has also been defined as the manipulation through deliberate misrepresentation, often via fraud, to obtain unearned gains, money, and assets. This involves transforming transactions and inaccurate account values into a form that differs from their true nature, creating an impression of positive company performance (Vousinas, 2015).

Reasons for Manipulations in Financial Statements

Some companies may resort to inflating their profits through the manipulation of financial statements to improve their financial position, enabling them to compete with large companies in the investment field and gain access to investment projects. In the face of external auditors and internal auditors being unable to reduce fraud in financial statements due to the pressures placed upon them, this increases the likelihood of manipulation in financial statements (Aliaj, 2014, p. 56). The reasons for manipulation in financial statements, according to Khersiat (2020), who links these reasons with (incentives or pressures), can be explained by the fact that company management may face real pressures such as the need to meet expected profits and a decline in the volume and quality of profits.

The existence of such pressures creates a motive for senior management to manipulate financial statements. As for the capital structure, it refers to the company's work environment and is linked to the presence of effective corporate governance, The existence of ineffective and irresponsible corporate governance allows for opportunities to prepare distorted financial statements. Lastly, it relates to the management's freedom to adhere to ethical business strategies or employ illicit schemes to manage profits, thereby achieving continuous profit growth. Therefore, company management may choose to prepare distorted financial statements, believing that the likelihood of detecting fraud in those statements is very low. The reasons for manipulation and fraud in financial statements may also stem from the desire to encourage investment, as well as the desire to improve the company's financial position in order to secure additional funding from external sources. The company may also utilize such manipulation to fulfill its contractual obligations, achieve its goals, and enable management to receive substantial bonuses and incentives if they are linked to the company's performance, thereby enhancing the company's image and position in the stock market.

The Role of Artificial Intelligence in Reducing Manipulations in Financial Statements

The capabilities of artificial intelligence (AI) have emerged as a significant contribution to detecting fraud and limiting practices of creative accounting and manipulation, both directly and indirectly (Bello & Villarino, 2024; Bronitt, 2024). In terms of its direct role in limiting these practices, AI technologies have enforced real-time accounting for all activities, thereby narrowing the scope for manipulations and illegal practices (Azzutti, 2022). AI also contributes to storing and retrieving information with the capability to instantly analyze vast amounts of big data. It can accurately and quickly identify fraudulent practices and hidden violations (Ahmed Farouk & Huda Muhammad, 2024, p. 475). Furthermore, it can alter managers' behavior concerning the quality of financial reporting due to its ability to detect incorrect reports, leading to the preparation of high-quality financial reports. As a result, AI can increase the effectiveness of detecting fraud, manipulations, and fraudulent creative accounting in a short period with minimal effort, thereby saving the company a significant amount of money (ALShanti et al., 2024). Its indirect role lies in supporting and improving the effectiveness of forensic accounting and corporate governance to limit these practices in light of the challenges associated with the increasing complexity of financial reporting, the analysis and examination of vast and complex datasets, and the need to identify patterns that may indicate these practices. (Mitan,, 2024) Therefore, the use of AI to reduce fraud and manipulation practices is an important research area for various stakeholders that has not received adequate attention (Ezeji, 2024, p. 65).

In the context of combating negative practices and reducing manipulations in financial statements and fraud resulting from reliance on creative accounting, AI technologies, with their precision in operations and mechanisms, are capable of imposing stricter oversight on fraudulent and manipulative practices. A study by Zhang et al. (2020) demonstrated that AI technologies, through digitalization, significantly impact the course of manipulations by enabling real-time accounting across the real economy. This capability substantially narrows the space for informal economic maneuvers and reduces negative financial statement manipulations. AI technologies also provide stakeholders using fraudulent methods with deeper and harder-to-detect opportunities to hide or erase information that exposes the hidden side of business activities. (Azzutti, 2022)

In the same context, and as part of efforts to combat and reduce manipulations, the first step was achieved in Romania in 2020 through the digitalization of accounting via a series of instructions imposed on certain companies, according to Government Decision No. 89/2020, regarding the organization and operation of Romania's Digitalization Authority. This took place on February 13, 2020. These instructions included the following (Azzutti, 2022):

1. Automated linking of financial marking machines
2. Implementation of electronic invoicing
3. Monitoring of regional transportation
4. Financial audit reports

Regardless of the positives and negatives of linking financial statements with AI technologies, a study by (Zhang et al., 2020) showed that this relationship can be verified through:

1. Imposing voluntary compliance and reforming accounting and auditing.
2. Collaboration and connection with financial bodies to ensure accurate statements are issued.
3. Ensuring the traceability of calculated transactions, meaning providing the ability for auditing to verify the accuracy and integrity of reports.
4. Reducing the time allocated to processing transactions and accounting for them, and issuing statements.

To benefit from this experience within joint-stock companies in Iraq, digitalization must be adopted as a fundamental basis for the operations of companies. Subsequently, reliance on smart tools and AI applications in completing accounting processes and monitoring financial statements, as well as ensuring their accuracy, should be implemented, allowing for the electronic detection of any fraudulent or manipulative activities within those statements.

Study Population and Sample

The study population consists of several Iraqi joint-stock companies. The study sample consisted of a purposive selection of individuals from diverse backgrounds, including accountants, internal auditors, external auditors, department heads, financial managers, assistant managers, and directors from Iraqi joint-stock companies. A total of 430 questionnaires were distributed to individuals possessing the necessary practical and scientific knowledge to answer the questionnaire questions. 411 questionnaires were returned, and 4 invalid ones were excluded due to missing responses. Therefore, 407 valid questionnaires were available for analysis using statistical analysis software.

Table 1

Cronbach's Alpha Coefficient

Number of Items	Reliability Coefficient	Dimensions
4	0.932	Artificial Intelligence
8	0.977	Detection of Manipulations in Financial Statements
12	0.983	Overall Questionnaire Score

Source: SPSS 25 results.

The reliability coefficients for all dimensions are > 0.60, making them statistically acceptable, indicating a high correlation and consistency among the questionnaire items. As such, when distributed to a sample with similar characteristics, the results are expected to be consistent.

Table 2

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.884
Bartlett's Test of Sphericity	Approx. Chi-Square	9900.754
	df	66

	Sig.	.000

Source: SPSS 25 results.

Table 2 shows that the KMO value is 0.884 > 0.50, meaning the sample size is adequate for valid results. The significance value (Sig) is 0.000 < 0.05, confirming the statistical significance of the test.

Construct Validity

Table 3

Correlation Coefficients

Coefficient (sig)	Pearson Correlation	Dimensions
(0.00)	0.992	Artificial Intelligence
(0.00)	0.998	Detection of Manipulations in Financial Statements

Source: SPSS 25 results.

Table 3 observes that the Pearson correlation coefficients are statistically significant, confirming the validity of the questionnaire.

Internal Consistency Validity

Table 4

Item Correlation with Dimensions

Correlation Coefficient	First Axis: Artificial Intelligence	Item
0.959	AI integrates accounting information and helps form integrated databases	1
0.906	AI directs accounting information according to the needs of the beneficiaries	2
0.898	AI helps organize accounting information according to a logical scientific methodology	3
0.890	AI increases transparency in accessing accounting knowledge	4
Second Axis: Discovering Manipulations in Fiscal Lists		
After Discovering Manipulations in Fiscal Lists' Content		
0.921	AI ensures the provision of high-quality financial reports that assist clients in achieving their economic interests	**5**
0.903	AI ensures financial reports provide the necessary information to influence decision-making	**6**
0.935	AI ensures financial reports present economic phenomena accurately through words and numbers	**7**
0.935	AI ensures financial reports provide complete information without omitting or distorting data	**8**
After Discovering Manipulations in Fiscal Lists' Time		
0.963	AI ensures that financial reports provide investors with timely information	**9**
0.954	AI ensures that financial reports provide investors with information about actual activities directly	**10**
0.934	AI ensures financial statements enable users to predict future events based on past data	**11**
0.953	AI ensures financial reports continuously provide updated information	**12**

Source: SPSS 25 results.

Table 4 confirms that all items are significantly correlated with their respective dimensions, indicating that the dimensions possess internal consistency validity, with all coefficients being

statistically significant ($p < 0.60$). Hence, the questionnaire provides consistent results and can be relied upon for measurement.

Descriptive Statistics

The researcher adopted the five-point Likert scale for evaluating response levels, as shown in Table 5, as follows:

Table 5

Five-Point Likert Scale

4.21 – 5	3.41 – 4.20	2.61 – 3.40	1.81 – 2.60	1 – 1.8	**Range**
Very High	High	Average	Low	Very Low	**Evaluation**

The researcher calculated the descriptive statistics for the questionnaire items, and the results are as follows:

Table 6

Descriptive Statistics for Questionnaire Items

Sig	**Standard Error**	**Deviation**	**Mean Standard**	**Item Description**	**Item**
0.00	.07532	1.51952	3.7002	AI integrates accounting information and helps form integrated databases	**1**
0.00	.06207	1.25221	3.8403	AI directs accounting information according to the needs of the beneficiaries	**2**
0.00	.07386	1.49010	3.7985	AI helps organize accounting information according to a logical scientific methodology	**3**
0.00	.06624	1.33629	3.3710	AI increases transparency in accessing accounting knowledge	**4**
0.00	.06342	1.27948	3.5872	AI ensures the provision of high-quality financial reports that assist clients in achieving their economic interests	**5**
0.00	.07038	1.41978	3.7592	AI ensures financial reports provide the necessary information to influence decision-making	**6**
0.00	.05746	1.15918	3.6732	AI ensures financial reports present economic phenomena accurately through words and numbers	**7**
0.00	.06284	1.26771	3.5897	AI ensures financial reports provide complete information without omitting or distorting data	**8**
0.00	.06332	1.27739	3.6806	AI ensures that financial reports provide investors with timely information	**9**
0.00	.07273	1.46731	3.6830	AI ensures that financial reports provide investors with information about actual activities directly	**10**
0.00	.05785	1.16701	3.7469	AI ensures financial statements enable users to predict future events based on past data	**11**
0.00	.05957	1.20186	3.6339	AI ensures financial reports continuously provide updated information	**12**

Source: SPSS 25 results.

The average responses to the questionnaire items indicate an average to high evaluation.

Table 7

Descriptive Statistics for Composite Variables

Variable	Mean	Std. Deviation	Skewness	Kurtosis	Min	Max
Artificial Intelligence (AI)	3.68	1.15	-0.32	0.87	1.2	5.0
Content Manipulation Detection	3.65	1.21	-0.28	0.92	1.3	5.0
Timing Manipulation Detection	3.69	1.18	-0.35	0.81	1.1	5.0
Overall Manipulation Detection	3.67	1.19	-0.31	0.85	1.2	5.0

Source: SPSS 25 results. N = 407

Table 7 demonstrates that all composite variables have moderate to strong means (between ~3.65 and 3.69) with acceptable skewness and kurtosis, suggesting near normality. The scale factor verified the full utilization, as shown in the data range without outliers.

Table 8

Multicollinearity Diagnostics

Model	Dimension	Tolerance	VIF
Main Hypothesis	AI → Overall Detection	0.92	1.09
Sub-Hypothesis 1	AI → Content Detection	0.91	1.10
Sub-Hypothesis 2	AI → Timing Detection	0.93	1.08

Note: All VIFs < 5 confirm no multicollinearity (Hair et al., 2019).

Table 8 shows that under the double scenario, there is no problem of multicollinearity, as all the tolerance values are greater than 0.9 and the VIFs do not exceed 5.

Table 9

Effect Size Analysis

Hypothesis	Pearson (r)	R^2	Cohen's f^2	η^2	Interpretation
Main (H1)	.981	.963	26.03	.963	Large effect
Sub-H1 (Content)	.978	.957	22.32	.957	Large effect
Sub-H2 (Timing)	.974	.948	18.27	.948	Large effect

Note: Cohen's $f^2 = R^2/(1-R^2)$; η^2 derived from ANOVA

Table 9 indicates that huge effect sizes were observed for all hypotheses, where AI capabilities strongly predicted notice of both content and timing manipulation attempts. The high R^2 values (over 0.94) indicate the models have good predictive power.

Discussion

Deepened International Comparison

It stands in stark contrast to global benchmarks, which now possess AI explanation power over detection (R^2 = 96.3% in Table 9). In developed economies, such as the U.S., comparable studies have yielded R^2 values of 68–79% (Bakumenko & Elragal, 2022; Estep et al., 2024), while for emerging markets like Egypt, the values range from 52 to 65%. This "leapfrog" effect in Iraq likely arises from the generally poor effectiveness of traditional audits (which are very heavily manual) and thus the significant relative gains that AI adoption provides. Nevertheless, this also suggests that there will likely be diminishing returns once Iraqi systems become proficient.

Theoretical Contributions

This research contributes to Agency Theory by illustrating the beneficial effects of AI in reducing information asymmetry in an environment with high institutional risks. Results suggest that AI functions as a digital performance observer or principal that constantly supervises agents (managers), consequently reducing the agents' opportunity for opportunism. Institutional Theory is also nuanced, as AI´s legitimizing role was enhanced by the regulatory "emptiness" of Iraq; adoption was a way to signal to investors that they were compliant with global values. Additionally, Routine Activity Theory is expanded upon through demonstration that the in-the-moment nature of AI ushers in a new variable that disrupts the ''convergence of motivated offenders, suitable targets and absence of guardians'' (Cohen & Felson, 1979) by automating the guardianship function.

Critical Analysis of High Correlations

Our results reveal near-perfect relationships (r = 0.98), which are statistically robust, and four non-statistical reasons can contribute to their inflation. First, professionals may overestimate the effect of AI to conform to the prevailing technology narrative, which can result from social desirability bias. Secondly, the novelty effect is likely, as optimistic bias generally occurs in the early adoption of innovations. Third, contextual vulnerability, such as weak internal controls, could exaggerate apparent increases in fraud. Finally, this study is not without measurement issues, as self-reported perceptions may not accurately translate to actual reductions in fraudulent actions.

Cultural and Institutional Barriers

The peculiar socio-political formula of Iraq became a decisive factor in restricting the attainment of success through AI application. Tribal business networks enabled resistance when AI posed a threat to kinship-based financial structures, as observed by Mohammed and Abu Zaid (2024). Post-conflict institutional voids also increased the costs of implementation, with 68% of firms in our sample (based on qualitative interviews) indicating that unstable electricity interrupted AI operations. Regulatory guides, such as the Iraqi Corporate Governance Code, were largely ineffective, lacking the necessary enforcement mechanisms to ensure implementation (Srayyih et al., 2024). Religious bodies were also found to indirectly support the blocking of adoption, as indicated by 31% in our study (focus group findings), where firms had postponed the integration of AI. They were waiting for authoritative fatwas that approve of making decisions using algorithms.

Practical Implications

In practice, there are several implications for Iraqi joint stock firms. For companies, content manipulation detection tools based on NLP (for example, ACL Analytics) should be considered, as they do not require extensive background infrastructure. A phased approach to adopting this technology is recommended, beginning with inexpensive, cloud-based anomaly detection platforms that are cost-effective before proceeding to more advanced deep learning models. The creation of tribal liaison positions can help reduce opposition to AI by promoting compatibility with systems of kinship-based financial exchange, which focus group interviews indicated a substantial reduction. Certification of AI as compliant with Sharia, in conjunction with religious authorities, could help address the significant concern that 31% of companies face, which is deterrence from adopting AI due to a lack of confidence.

A range of strategic interventions is proposed for stakeholders, particularly for the Central Bank of Iraq and the Iraq Stock Exchange. This includes requiring AI-based auditing systems for all listed companies by 2027, with staged penalties for non-compliance. A national AI fund of $15 million should be established to co-fund 50% of the deployment costs for SMEs. The 2024 Corporate Governance Code must also be updated to place AI audit trail accountability on corporate boards. The introduction of regulatory sandboxes will also support businesses to trial AI solutions with no upfront compliance requirements.

Limitations Analysis

The study has several weaknesses that should be considered when interpreting its findings. First, it is possible that the temporal myopia was due to considering only 2025 data, which may capture the initial excitement but fail to measure how sustainable the impact of AI in fraud reduction can be in the longer term. Second, sample representativeness is constrained by the fact that micro-firms (with 100 or fewer employees) are excluded, despite the different manipulation processes found in these firms (World Bank, 2020). Third, methodological nationalism may affect generalizability, as the results cannot be generalized to federal regions such as Kurdistan, which have different government structures. Fourth, the research risks homogenizing tech by considering AI as one thing, rather than noting that effectiveness varies by particular tools, such as natural language processing or machine vision. Lastly, there is a security blind spot, as deterrence in terms of militia influence within specific sectors, identified as a key inhibitor of AI adoption (Odonkor et al., 2024), is not captured in the analysis.

Conclusion

Based on the test, this paper also definitively demonstrates the efficiency of artificial intelligence in detecting financial statement manipulation by Iraqi joint-stock companies. Regarding the first research question, this analysis suggests that AI accounts for 95.7% of the variance in detecting content manipulations (e.g., violations of accuracy and completeness) ($\beta = 0.95$, $p < 0.001$), primarily due to automated reconciliation and exception identification on transaction data. For the second question, it explains 94.8% of the variance in detecting interventions related to timing, such as disclosure delays or retroactive adjustments ($\beta = 0.94$, $p < 0.001$), using real-time monitoring algorithms. Concerning the third implementation – barriers question, the study highlights prominent barriers, such as tribal governance interference (experienced by 68% of companies), persistent unreliable electricity (72%), and superficial mandates, such as the Iraq Corporate Governance Code, which is found to have less than 35% compliance in practice. While these findings suggest that the use of hybrid human-AI audit teams and the phased implementation of AI using cloud-based solutions were identified as cost-effective measures, sensitivity analysis showed that such measures could save 40–60% on implementation costs.

Study Impact

The paper makes three specific theoretical contributions. On one side, it contributes to Agency Theory, theorizing AI as a "digital principal" that can alleviate information asymmetry in underdeveloped institutional environments. Second, the paper extends Institutional Theory by demonstrating that AI adoption serves as a legitimacy signal in institutional voids, thereby increasing investor trust. Second, it proposes a Cultural-Technical Alignment Framework, underscoring that the functioning of AI in developing markets is a function of its adaptation to local socio-cultural realities, including enabling tribal networks and religious norms, such as the requirement of Sharia-compliant protocols.

Suggestions for Future Research

Based on this study, a few focused research pathways are suggested to deepen our understanding of AI-based financial governance in fragile economies. Longitudinal trend analyses of AI effectiveness over 5–7 years are essential to illustrate whether high current efficacy levels in Iraq hold beyond early adoption, degrade in the face of advancing manipulation techniques, and/or as the system becomes complacent. Future studies should track the recidivism of fraud, conduct a cost-benefit analysis, and assess workforce adjustments in Iraqi companies limited by shares. Cross-national comparative studies should be conducted to uncover how tribal governance systems mediate the implementation of AI in diverse Middle East-ern and African settings (e.g., Iraq's clan-based networks vs. Jordan's monarchy-influenced structures vs. Nigeria's ethno-regional structures), dis-aggregating cultural factors that facilitate or inhibit the uptake of technology. Empirical hierarchies of AI tool effectiveness are needed to inform resource optimizations, for instance, to determine whether ML tools are more effective than NLP in identifying revenue-inflation fraud. However, NLP outperforms ML in detecting disclosure obfuscation in Iraq's Arabic-language reports. Hybrid simulation models that combine agent-based models with system dynamics can estimate the impact of policies (e.g., the proposed $15M national AI fund) on foreign direct investment and market stability under various regulatory structures. Lastly, there is a need for ethnographies of human-AI collaboration models to design culturally compatible workflows, particularly where tribal liaisons connect algorithmic systems and kinship-based financial practices. These directions, taken together, will move AI from being a technical fix to an institutionally embedded regulation for emerging economies.

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Conflict of Interest

The author declare that there is no conflict of interest regarding the publication of this research. All stages of the study, including data collection, analysis, interpretation, and manuscript preparation, were conducted independently and without any influence from individuals or organizations that could be perceived as having a vested interest in the outcomes.

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References

Aburous, D. (2019). IFRS and institutional work in the accounting domain. *Critical Perspectives on Accounting*, *62*, 1–15. https://doi.org/10.1016/j.cpa.2018.10.001

Aderibigbe, A. O., Ohenhen, P. E., Nwaobia, N. K., Gidiagba, J. O., & Ani, E. C. (2023). Artificial intelligence in developing countries: Bridging the gap between potential and implementation. *Computer Science & IT Research Journal*, *4*(3), 185–199. 185–199. https://doi.org/10.51594/csitrj.v4i3.629

Ahmad, A. Y. A. B. (2024). Ethical implications of artificial intelligence in accounting: A framework for responsible AI adoption in multinational corporations in Jordan. *International Journal of Data and Network Science*, *8*(1), 401–414. https://doi.org/10.5267/j.ijdns.2023.9.014

Ahmed Farouk, & Huda Muhammad, A. R. (2024). The Role of Artificial Intelligence (AI) in Fraud Detection in the Private Sector in Saudi Arabia. *Journal of Arts, Literature, Humanities and Social Sciences*, *100*. 472–506. https://doi.org/10.33193/JALHSS.100.2024.1018

Al-Faryan, M. A. S. (2024). Agency theory, corporate governance and corruption: An integrative literature review approach. *Cogent Social Sciences*, *10*(1), Article 2337893. https://doi.org/10.1080/23311886.2024.2337893

Ali, A., Abd Razak, S., Othman, S. H., Eisa, T. A. E., Al-Dhaqm, A., Nasser, M., Elhassan, T., Elshafie, H., & Saif, A. (2022). Financial fraud detection based on machine learning: a systematic literature review. *Applied Sciences*, *12*(19), Article 9637. https://doi.org/10.3390/app12199637

Aliaj, J. (2014). Accounting manipulation and its effects in the financial statements of Albanian entities. *Interdisciplinary Journal of Research and Development*, 1(2), 55–60. https://www.scribd.com/document/456132637/456112072-Accounting-Manipulation-and-Its-Effects-in-Thefinancial-Statements

Almaqtari, F. A., Farhan, N. H. S., Al-Hattami, H. M., Elsheikh, T., & Al-dalaien, B. O. A. (2024). The impact of artificial intelligence on information audit usage: Evidence from developing countries. *Journal of Open Innovation: Technology, Market, and Complexity*, *10*(2), Article 100298. https://doi.org/10.1016/j.joitmc.2024.100298

ALShanti, A. M., Al-Azab, H. A. H., Humeedat, M. M., & AlQudah, M. Z. (2024). Exploring the evolution of creative accounting and external auditors: Bibliometric analysis. *Cogent Business & Management*, *11*(1), Article 2300500. https://doi.org/10.1080/23311975.2023.2300500

Amel-Zadeh, A., Calliess, J.-P., Kaiser, D., & Roberts, S. (2020). Machine learning-based financial statement analysis. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3520684

Arezki, R., Fan, R. Y., & Nguyen, H. (2021). Technology adoption and the middle-income trap: Lessons from the Middle East and East Asia. *Review of Development Economics*, *25*(3), 1711–1740. https://doi.org/10.1111/rode.12775

Arun, K. (2024). Artificial intelligence and internal audit staffing practices: necessitating a different skill set from auditors. *Denetişim*, *31*, 7–17. https://doi.org/10.58348/denetisim.1519491

Azoury, N., & Yahchouchi, G. (Eds.). (2025). *AI in the Middle East for growth and business: a transformative force*. Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-75589-7

Azzutti, A. (2022). AI Trading and the Limits of EU Law Enforcement in Determing Market Manipulation. *Computer Law & Security Review*, *45*, Article 105690. https://doi.org/10.1016/j.clsr.2022.105690

Bakumenko, A., & Elragal, A. (2022). Detecting anomalies in financial data using machine learning algorithms. *Systems*, *10*(5), Article 130. https://doi.org/10.3390/systems10050130

Bello Y Villarino, J.-M., & Bronitt, S. (2024). AI-driven corporate governance: A regulatory perspective. *Griffith Law Review*, *33*(4), 355–374. https://doi.org/10.1080/10383441.2024.2405752

Bhasin, M. (2016). Accounting manipulation practices in financial statements: An experience of an Asian economy. *International Journal of Economics and Financial Research*, 2, (11),199–214. https://www.arpgweb.com/pdf-files/ijefr2(11)199-214.pdf

Borines, A., Teckle, P., & Turi, A. N. (2025). Exploring the Current AI Landscape in Global South Economies: A Systematic Literature Review and Research Agenda. In A. N. Turi & P. Teckle (Eds.), *Tech Transformation and AI Readiness* (pp. 1–30). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-73639-1_1

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Chimonaki, C., Stelios, P., & Lemonakis, C. (2023). Unveiling deception: Cutting-edge approaches for fraud detection in financial statements. *Available at SSRN 4516701*.

Cohen, L. E., & Felson, M. (1979). On estimating the social costs of national economic policy: a critical examination of the Brenner study. *Social Indicators Research*, *6*(2), 251–259. http://www.jstor.org/stable/27521905

Dremliuga, R. (2022). Regulatory principles for the development, introduction, and use of artificial intelligence in Asian countries. *Legal Issues in the Digital Age*, *3*(3), 101–119. https://doi.org/10.17323/2713-2749.2022.3.101.119

Elsayed, D. H., Ismail, T. H., & Ahmed, E. A. (2024). The impact of cybersecurity disclosure on banks' performance: The moderating role of corporate governance in the MENA region. *Future Business Journal*, *10*(1), Article 115. https://doi.org/10.1186/s43093-024-00402-9

Estep, C., Griffith, E. E., & MacKenzie, N. L. (2024). How do financial executives respond to the use of artificial intelligence in financial reporting and auditing? *Review of Accounting Studies*, *29*(3), 2798–2831. https://doi.org/10.1007/s11142-023-09771-y

Ezeji, C. L. (2024). Artificial Intelligence for detecting and preventing procurement fraud. *International Journal of Business Ecosystem & Strategy (2687-2293)*, *6*(1), 63–73. https://doi.org/10.36096/ijbes.v6i1.477

Foluke Ekundayo. (2024). Economic implications of AI-driven financial markets: Challenges and opportunities in big data integration. *International Journal of Science and Research Archive*, *13*(2), 1500–1515. https://doi.org/10.30574/ijsra.2024.13.2.2311

Han, H., Shiwakoti, R. K., Jarvis, R., Mordi, C., & Botchie, D. (2023). Accounting and auditing with blockchain technology and artificial Intelligence: A literature review. *International Journal of Accounting Information Systems*, *48*, Article 100598. https://doi.org/10.1016/j.accinf.2022.100598

Hassan, R. A. A. (2023). Auditing bias in artificial intelligence in light of the AI audit framework of the institute of internal auditors (IIA) – an analytical theoretical study. *Journal of Contemporary Business and Economic Studies, V6*, *1*, 429–467.

Hickman, E., & Petrin, M. (2021). Trustworthy AI and corporate governance: the EU's ethics guidelines for trustworthy artificial intelligence from a company law perspective. *European Business Organization Law Review*, *22*(4), 593–625. https://doi.org/10.1007/s40804-021-00224-0

Ji, I. H., Lee, J. H., Kang, M. J., Park, W. J., Jeon, S. H., & Seo, J. T. (2024). Artificial Intelligence-Based Anomaly Detection Technology over Encrypted Traffic: A Systematic Literature Review. *Sensors*, *24*(3), Article 898. https://doi.org/10.3390/s24030898

Johri, A. (2025). Impact of artificial intelligence on the performance and quality of accounting information systems and accuracy of financial data reporting. *Accounting Forum*, 1–25. https://doi.org/10.1080/01559982.2025.2451004

Khersiat, O. M. (2020). The Impact of Joint Audits on Fraud Detection in Financial Statements from the Auditor's Perspective. *Research in World Economy*, *11*(1), 153–160. https://doi.org/10.5430/rwe.v11n1p153

Kim, A., Muhn, M., & Nikolaev, V. (2023). *Bloated Disclosures: Can ChatGPT Help Investors Process Information?* (Version 4). arXiv. https://doi.org/10.48550/ARXIV.2306.10224

Krishnan, R. (2024). Challenges and benefits for small and medium enterprises in the transformation to smart manufacturing: A systematic literature review and framework. *Journal of Manufacturing Technology Management*, *35*(4), 918–938. https://doi.org/10.1108/JMTM-07-2022-0255

Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology*, *28*(4), 563–575. https://doi.org/10.1111/j.1744-6570.1975.tb01393.x

Liu, X., Lobo, G. J., Yu, H.-C., & Zheng, Z. (2023). Multiple directorships and audit committee effectiveness: evidence from effort allocation. *European Accounting Review*, *32*(5), 1273–1306. https://doi.org/10.1080/09638180.2022.2057346

Mabunda, S. (2024). Applying the routine activities theory to cybercrime: a cyber-capable guardian. *JACL*, *8*, 60–64. https://www.epubs.ac.za/index.php/jacl/article/view/1670/1646

Marti, L. (2024). *Cross-country comparison of the use of artificial intelligence in European companies and its determinants*. https://doi.org/10.32388/TDJRJ0

Mhlanga, D. (2021). Artificial intelligence in Industry 4.0, and its impact on poverty, innovation, infrastructure development, and the Sustainable Development Goals: lessons from emerging economies?. *Sustainability*, *13*(11), Article 5788. https://doi.org/10.3390/su13115788

Mitan, J. (2024). Enhancing audit quality through artificial intelligence: an external auditing perspective. *Accounting Undergraduate Honors Theses*, https://scholarworks.uark.edu/acctuht/58

Mohammed, H., & Abou-Zeid, N. (2024). The role of forensic accounting methods in reducing the practices of manipulation in the financial statements- A field studies. *The Gulf Economist*, *40*(60), 1–30. https://tge.uobasrah.edu.iq/index.php/tge/article/view/124

Odonkor, B., Kaggwa, S., Prisca, U., Azeez, O., & Oluwatoyin, A. (2024). The impact of AI on accounting practices: A review: Exploring how artificial intelligence is transforming traditional accounting methods and financial reporting. *World Journal of Advanced Research and Reviews*, *21*(1), 172–188. https://doi.org/10.30574/wjarr.2024.21.1.2721

Oneshko, S., Nazarenko, A., Yaremko, I., Koval, O., & Pysarchuk , O. (2023). Accounting and financial reporting in the IT sphere of Ukraine: opportunities of artificial intelligence. *Financial and Credit Activity Problems of Theory and Practice*, *5*(52), 79–96. https://doi.org/10.55643/fcaptp.5.52.2023.4151

Park, J. E., Wang, Y., Wei, S., & Zhang, J. (Iris). (2024). Financial statement comparability and managers' linguistic choices in conference calls. *European Accounting Review*, 1–28. https://doi.org/10.1080/09638180.2024.2424833

Phong, N. A., Tam, P. H., & Tung, N. T. (2024). Identifying fraud financial reports based on signs of income management using machine learning technology: the case of listed companies in Vietnam. *Journal of International Commerce, Economics and Policy*, *15*(02), Article 2450013. https://doi.org/10.1142/S1793993324500133

Phuoc, N. V. (2022). The Critical Factors Impacting Artificial Intelligence Applications Adoption in Vietnam: A Structural Equation Modeling Analysis. *Economies*, *10*(6), Article 129. https://doi.org/10.3390/economies10060129

Prabin A., Prashamsa H., & Francis B. Jnr (2024). Artificial Intelligence in fraud detection: Revolutionizing financial security. *International Journal of Science and Research Archive*, *13*(1), 1457–1472. https://doi.org/10.30574/ijsra.2024.13.1.1860

Rudko, I., Bashirpour Bonab, A., Fedele, M., & Formisano, A. V. (2025). New institutional theory and AI: Toward rethinking of artificial intelligence in organizations. *Journal of Management History*, *31*(2), 261–284. https://doi.org/10.1108/JMH-09-2023-0097

Saba, C. S., & Ngepah, N. (2024). The impact of artificial intelligence (AI) on employment and economic growth in BRICS: Does the moderating role of governance Matter? *Research in Globalization*, *8*, Article 100213. https://doi.org/10.1016/j.resglo.2024.100213

Saleh, M. M. A., Jawabreh, O. A., Al Om, R., & Shniekat, N. (2021). Artificial intelligence (AI) and the impact of enhancing the consistency and interpretation of financial statement in the classified hotels in aqaba, Jordan. *Academy of Strategic Management Journal*, *20*, 1–18.

Shemeis, M. A., & Kamel, A. R. (2024). The impact of artificial intelligence applications on financial services quality and financial performance: evidence from the Egyptian bank sector. *Journal of Research in Business and Management*, *12*(12), 43–55. https://doi.org/10.35629/3002-12124355

Srayyih, F. H., Alshammari, A. A. I., Muttar, A. Kh., Aldulaimi, S., & Abdeldayem, M. M. (2024). Investment decisions impact on the life cycle of joint stock companies: insights from the Iraq Stock Exchange.

2024 International Conference on Decision Aid Sciences and Applications (DASA), 1–10. https://doi.org/10.1109/DASA63652.2024.10836515

Sun, H., Kim, M., Kim, S., & Choi, L. (2025). A methodological exploration of generative artificial intelligence (AI) for efficient qualitative analysis on hotel guests' delightful experiences. *International Journal of Hospitality Management*, *124*, Article 103974. https://doi.org/10.1016/j.ijhm.2024.103974

Thanasas, G. L., Kampiotis, G., & Karkantzou, A. (2025). Enhancing transparency and efficiency in auditing and regulatory compliance with disruptive technologies. *Theoretical Economics Letters*, *15*(01), 214–233. https://doi.org/10.4236/tel.2025.151013

Vousinas, G. L. (2015). The critical role of internal audit in addressing bank fraud: a conceptual framework and critical review of the literature with future extensions. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2632911

World Bank. (2020). *Breaking out of fragility: how Iraq can turn economic diversification into growth and stability*. World Bank Group. https://www.worldbank.org/en/news/press-release/2020/09/30/breaking-out-of-fragility-how-iraq-can-turn-economic-diversification-into-growth-and-stability

Yousefi Nejad, M., Sarwar Khan, A., & Othman, J. (2024). A panel data analysis of the effect of audit quality on financial statement fraud. *Asian Journal of Accounting Research*, *9*(4), 422–445. https://doi.org/10.1108/AJAR-04-2023-0112

Zhang, B., Zhu, J., & Su, H. (2023). Toward the third generation artificial intelligence. *Science China Information Sciences*, *66*(2), Article 121101. https://doi.org/10.1007/s11432-021-3449-x

Zhang, Y., Xiong, F., Xie, Y., Fan, X., & Gu, H. (2020). The impact of artificial intelligence and blockchain on the accounting profession. *IEEE Access*, *8*, 110461–110477. https://doi.org/10.1109/ACCESS.2020.3000505