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"The Role of External Auditing in Reducing Hidden Accounting Practices: The Mediating Role of Predictive Analytics Technology" (Field Study: Opinions of a Sample of Employees at the Federal Board of Supreme Audit

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Abstract : This research aims to clarify the role of external auditing in reducing hidden accounting practices by integrating predictive analytics techniques. It analyzes the effectiveness of external auditing in detecting and mitigating such practices within Iraqi institutions. The study adopts a descriptive (deductive) approach to define the nature of the variables and their relationships, alongside an applied (inductive) method to evaluate financial reports from commercial banks and Iraq Stock Exchange bulletins. Inferential statistical methods were used to test the hypotheses through SPSS (version 16) and AMOS software. Due to the specialized nature of the topic, a purposive sampling method was adopted. The research sample consisted of employees from the Federal Financial Supervision Bureau in Al-Muthanna and Al-Qadisiyyah governorates, representing part of Iraq's federal oversight system. A total of 70 questionnaires were distributed across both governorates in 2025, targeting professionals directly involved in external auditing. The findings revealed a positive correlation between external auditing and hidden accounting practices, indicating auditors' awareness and efforts to detect manipulation. The study recommends enhancing auditor independence and equipping them with advanced analytical tools to improve detection capabilities and ensure the integrity of financial statements
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Keywords: External Auditing, Hidden Accounting Practices, Predictive Analytics

INTRODUCTION: In response to the growing challenges facing today's business environment, there is an urgent need to strengthen financial oversight mechanisms to ensure transparency and accountability in accounting operations. External auditing stands out as a key control tool, playing a vital role in identifying accounting irregularities and manipulations, especially those concealed through sophisticated methods that evade traditional detection techniques .In Iraq, the financial and administrative landscape is marked by structural complexity and overlapping regulatory authorities, which amplifies the importance of external auditing in curbing institutional corruption and enhancing financial performance. However, hidden accounting practices pose a significant challenge to auditors. These practices are often executed in ways that reshape the financial image of an entity without overtly violating local accounting standards, making them difficult to detect using conventional audit procedures .This challenge highlights the potential of predictive analytics technology as a mediating tool that enhances the effectiveness of external auditing. By uncovering latent financial and behavioral patterns and forecasting risks before they materialize, predictive analytics transforms auditing from a reactive process into a proactive strategy. The integration of such technology is not merely a technical enhancement—it represents a paradigm shift in financial control philosophy, enabling smarter audit models that adapt to dynamic business conditions and support data-driven decision-making .Despite extensive literature on external auditing and financial transparency, a clear research gap remains: prior studies have not sufficiently addressed the interactive role of predictive analytics in strengthening external audit effectiveness, particularly in detecting hidden accounting practices within the Iraqi context. This gap forms the foundation of the current study, which seeks to explore how predictive analytics can mediate the relationship between external auditing and the reduction of hidden accounting practices. Accordingly, the research has been divided into four chapters. The first chapter addresses the research methodology and previous studies, while the second chapter covers the theoretical aspect of external auditing, hidden accounting practices, and predictive analytics techniques. The third chapter focuses on the practical aspect of the research, including data analysis, hypothesis testing, and presentation of results. The fourth chapter discusses the conclusions and recommendations.

Chapter One
Research Methodology
1-1 Research Problem
Many governmental and private institutions in Iraq suffer from the ineffectiveness of external auditing in detecting hidden accounting practices, which result in the loss of public resources and a decline in confidence in financial reports. Despite the presence of multiple regulatory bodies, the limited use of modern analytical tools, such as predictive analytics technology, weakens the external audit's ability to detect non-obvious patterns of financial manipulation. In a volatile economic environment and a lack of transparency, there arises a need to study the extent to which external auditing can reduce these practices and the effectiveness of predictive analytics as a mediating variable that enhances this role. Accordingly, the following question emerges: What is the impact of external auditing on reducing hidden accounting practices in Iraq, and what role does predictive analytics technology play as a mediating variable in this relationship? The following sub-questions are formulated:

1-To what extent are hidden accounting practices prevalent in Iraqi institutions, and what are their most prominent forms؟

2-What is the current effectiveness level of external auditing in detecting and addressing these practices؟

3-To what extent is predictive analytics technology used in external audit processes within Iraq؟

4-Does the integration of predictive analytics contribute to enhancing the ability of external auditors to detect accounting manipulation؟

5-What is the statistical relationship between external auditing and predictive analytics in influencing the reduction of hidden accounting practices؟

1-2 Research Significance
The significance of this research stems from its focus on a pivotal issue within the Iraqi business environment, namely the limited effectiveness of external auditing in detecting covert accounting practices, which represent one of the most prominent challenges to financial transparency and anti-corruption efforts. The research gains additional importance through the introduction of predictive analytics as a mediating variable, thereby opening new avenues for developing auditing tools and enhancing their efficiency in an environment characterized by administrative complexity and multiple regulatory bodies. This research contributes to:

1. What are the most prevalent forms of hidden accounting practices in Iraqi institutions؟
2. How effective is external auditing in detecting and mitigating these hidden practices؟
3. To what extent is predictive analytics technology currently integrated into external auditing processes in Iraq؟
4. How does the integration of predictive analytics enhance the effectiveness of external auditing in detecting hidden accounting practices؟
5. What is the nature of the statistical relationship between external auditing, predictive analytics technology, and the reduction of hidden accounting practices?

1-3 Research Objectives
The research aims to clarify the role of external auditing in reducing covert accounting practices by relying on predictive analytics technology. The following sub-objectives derive from this primary objective:

1- Analyzing the effectiveness of external auditing in detecting and reducing covert accounting practices in Iraqi institutions.

2- Exploring the role of predictive analytics technology as a mediating variable that enhances the ability of external auditing to monitor hidden accounting patterns.

3- Measuring the statistical relationship between external auditing and covert accounting practices, and determining the extent of predictive analytics' impact on this relationship.

4- Identifying the most prominent forms and methods of hidden accounting practices prevalent in the Iraqi business environment, and analyzing the reasons for their persistence.

5-Proposing an integrated regulatory model combining external auditing and predictive analytics, aimed at enhancing transparency and accountability in financial reporting.

1-4 Research Hypotheses
The study is based on the following main hypothesis:

Main Hypothesis: External auditing contributes significantly to the reduction of hidden accounting practices, and this effect is enhanced through the integration of predictive analytics technology.

From this, two distinct and non-overlapping sub-hypotheses are derived:

Sub-Hypothesis 1 :There is a statistically significant positive correlation between the effectiveness of external auditing and the reduction of hidden accounting practices, mediated by the use of predictive analytics technology.
Sub-Hypothesis 2 :The integration of predictive analytics technology significantly enhances the impact of external auditing on reducing hidden accounting practices.

1-5 Research Boundaries

The research consists of the following boundaries:

-Spatial boundaries: Financial Control Bureau / Al-Muthanna – Al-Qadisiyah.

-Temporal boundaries 2025.

-Cognitive boundaries: External auditing, hidden accounting practices, predictive analytics technology.

1-6 Research Population and Sample

The research community consists of the entities affiliated with the Federal Financial Supervision Bureau in Iraq. Due to the specialized nature of the study's subject, which focuses on the role of external auditing and the integration of predictive analytics techniques in detecting concealed accounting practices, a purposive sampling method was adopted for participant selection .Accordingly, the research sample was selected from the employees of the Financial Supervision Bureau in the Muthanna and Al-Qadisiyyah governorates for the year 2025, considering that they represent part of the federal supervisory system and are characterized by field accessibility and the availability of specialized external auditing staff.

1-7 Research Methodology

This study adopts a descriptive-analytical methodology, which is most suitable for the nature of a field-based investigation aimed at analyzing the relationship between external auditing, hidden accounting practices, and the mediating role of predictive analytics technology. The descriptive aspect is employed to explore and define the characteristics of the research variables, while the analytical component is used to examine the interrelationships among them based on data collected from a sample of employees at the Federal Board of Supreme Audit .Given that the study relies primarily on a questionnaire as the main data collection tool, the research also utilizes a quantitative approach to test the hypotheses and assess the statistical significance of the proposed relationships. Inferential statistical techniques are applied using SPSS (version 16) and AMOS software to conduct path analysis or structural equation modeling (SEM), depending on the suitability of the data .The questionnaire was developed based on a thorough review of relevant literature and previous studies, ensuring its alignment with the Iraqi institutional context. To validate the instrument, statistical tests such as Cronbach’s Alpha for reliability and factor analysis for construct validity were conducted.

1-8 Data Collection Methods

Through reviewing books, theses, dissertations, research papers, and journals from available libraries and international information networks that discussed the topic of external auditing and hidden accounting practices. The practical aspect was represented by statistical methods. A questionnaire was designed for the study to obtain data related to the practical side, relying on measures available in the literature where found, and formulated to align with the concept of the variable to be measured.

1-9 Research Variables

The research consists of three variables as follows:

-Independent Variable (External Auditing): The process of examining financial statements by an independent entity to ensure their accuracy and compliance with accounting standards.

-Dependent Variable (Hidden Accounting Practices): Non-transparent methods used to conceal or modify financial information to achieve specific objectives.

-Mediating Variable (Predictive Analytics Technique): Data analysis tools used to forecast future trends and support accurate financial decision-making.

1-10 Previous Studies

Study (Al-Araki, 2021) titled: "The Impact of External Auditing on the Quality of Financial Statement Information"
The study aimed to identify the role of external auditing in the quality of financial statement information applied to Faisal Islamic Bank in 2017 and to provide a historical overview of auditing and auditing standards, as well as to identify the role played by adherence to the ethics of the accounting profession. The study methodology was descriptive (analytical), addressing the field aspect and employing deductive and inductive approaches to test the hypotheses. The study results showed a significant impact of the role of external auditing in (improving the relevance of information, improving the quality of information, increasing the reliability of information) in financial statements.
Study (Abdel Wahab, Abdel Malik, and Hamza, 2020) titled: "The Role of External Auditing of Accounts in Reporting on the Continuity of the Institution’s Activity"

This study aimed to determine the role of external auditing of accounts and reporting on the continuity of institutional activity in Algeria under the application of International Standards on Auditing (ISAs). This was achieved by reviewing the total assumptions, procedures, and principles governing the theoretical framework of external auditing, as well as presenting legislation and comparative analysis of external auditing of accounts based on ISAs. The study employed multiple methodologies in response to the nature of the subject. The historical method was adopted concerning the historical development of auditing; the descriptive analytical method was used regarding the theoretical framework of auditing; and the inductive method was applied to diagnose the problem of business continuity in Algerian companies. One of the most important findings of this study is that there is a role for the scope of responsibility of the external auditor in reporting on the continuity of the institution's activity.

.**Study (Al-Tikriti, 2022)** The Role of the External Auditor in Reducing Hidden Accounting Practices in the Financial Statements of Iraqi Public Joint Stock Companies (From the Perspective of Iraqi Auditors) This study aimed to identify the role of the external auditor in reducing hidden accounting practices in the financial statements (Statement of Financial Position, Statement of Profit or Loss, Statement of Cash Flows, Statement of Changes in Equity) of Iraqi public joint stock companies. The descriptive and analytical methodologies were adopted to conduct the study. The study reached several conclusions, the most important of which are: there is a role for the external auditor in reducing hidden accounting practices in the (Statement of Financial Position, Statement of Profit or Loss, Statement of Cash Flows, Statement of Changes in Equity), in descending order of importance, within Iraqi public joint stock companies.

Study by Al-Obaidi and Abdul-Kadhim (2025): The Impact of Using Predictive Analytics Techniques on the Strategic Cost Management System in the Banking Sector. This study aimed to examine the extent to which the development of predictive models contributes to enhancing the operational effectiveness of the strategic cost management system, with a focus on the Iraqi banking sector. The researchers employed descriptive and analytical methodologies, and data were analyzed using SPSS software, providing precise statistical rigor to the results. The study was applied to Al-Rasheed Bank, where 132 questionnaires were distributed, with 124 valid questionnaires retrieved for analysis. The study demonstrated that predictive analytics is not merely a decision-support tool but a fundamental element in improving the efficiency of accounting information systems, contributing to the formulation of more accurate financial strategies, reducing operational risks, and achieving financial sustainability. The study recommended the necessity of developing an advanced technological environment.

Study (Abdalwahab & ALkabbji, 2020) titled: Impact of External Auditing Quality and Audit Committees on Accounting Conservatism and the Performance of Industrial Firms Listed at the Amman Stock Exchange. The study aimed to investigate the impact of external auditing quality and audit committees on accounting conservatism and the performance of industrial firms listed at the Amman Stock Exchange. The accrual model was used to measure accounting conservatism. Firm performance was measured through market value. The study concluded that audit committees have no effect on accounting conservatism and the firm performance, while the characteristics of audit quality positively affect accounting conservatism and firm performance

Study (Harb, 2020) titled: The Role of External Audit in View of Sudden Financial Collapses on the Jordanian Commercial Banks Sector. The study aimed to determine the role of auditing in confronting sudden financial collapses of Jordanian commercial companies, to identify the effect of external auditing on compliance with external auditing standards by Jordanian commercial companies, and to determine the effect of external auditing in detecting fraud and deception in Jordanian commercial companies. The study adopted an analytical, descriptive, and field methodology. The results showed a statistically significant effect of external auditing on sudden financial collapses in Jordanian commercial companies. The study also indicated a statistically significant effect of external auditing on the extent of compliance of Jordanian commercial companies with professional standards.

Study (Ismeal, Aziz, Sorguli, & et al., 2021) entitled: The Role of External Auditing in Reducing Creative Accounting Practices.

The current study aimed to examine external auditing as a critical factor influencing creative cost accounting. For this purpose, the researchers employed three different dimensions of external auditing to enable the study to measure creative cost accounting. The first type of external auditing was the general standard, the second type was the fieldwork standard, and the third type was the reporting standard. The study consists of three independent variables (general standard, fieldwork standard, and reporting standard) and creative cost accounting as the dependent variable. The current research applied a quantitative research methodology. Both descriptive and analytical approaches were followed to conduct the study. The results showed that the general standard, fieldwork standard, and reporting standard have a significant positive effect on creative cost accounting at the 5% significance level.

1-11 Distinctive Feature of the Current Study Compared to Previous Studies

This study addressed creative accounting, which is an important and novel topic with limited local-level research. Additionally, the time period covered by this study extends to the year 2025, whereas previous studies covered relatively older periods. These previous studies did not directly address creative accounting. Through the application of this study, problems arising from this practice were identified, and appropriate alternatives and solutions were proposed. Furthermore, this study investigates external auditing and its relation to creative accounting. The current study is distinguished by its focus on the study problem

Chapter Two

Theoretical Aspect

2-1 Concept of External Auditing

Various definitions have been provided by authors and researchers regarding the concept of external auditing. Abdullah defines it as "the examination of internal control systems, data, documents, accounts, and books of the audited entity through a systematic critical inspection, with the objective of issuing an impartial technical opinion on the extent to which the financial statements reflect the financial position of the entity at the end of a specified period, and the degree to which they represent the results of its operations in terms of profit or loss for that period." (Abdullah, 2010: 13) According to this definition, the auditing process includes three main functions: examination, investigation, and reporting. These functions enable the auditor to express an impartial technical opinion on the financial statements by verifying the accuracy of transaction measurement, recording, analysis, classification (disclosure), and the ability of the financial statements to fairly represent the company's operations and financial position. Additionally, the auditor reports the impartial technical opinion in a report prepared to express the results of the examination and investigation. Arens defines it as the collection and evaluation of evidence about information to determine the degree of conformity with established standards and reporting on that. The audit must be performed by a competent person. (Arens et al., 2017: 4-5) Yassin defines external auditing as the auditor's ability to detect errors, fraud, and manipulation during the audit process (Yassin, 2017: 36). Al-Asmari defines it as a broad concept; however, it can be described as the probability that the auditing firm detects errors in the financial statements and reports them (Al-Asmari, 2020: 48). Al-Wattar defines external auditing as the extent of the auditor's compliance with fieldwork standards and reporting standards (Al-Wattar, 2016: 54). Sharbaty defined it as the extent of compliance with the generally accepted auditing standards specific to the report (Sharbaty, 2018: 78). Abdullah defined external auditing as the characteristics that distinguish the auditor's professional opinion, which leads to satisfying the needs of financial statement users, within the limits of practical constraints (Abdullah, 2016: 112). Al-Siagi indicated that the quality of external auditing is the assurance that the auditor performs their work in a manner that achieves the expected objectives of the audit process for the relevant parties (financial statement users, auditing firms, professional companies, governmental bodies, and the audited company) (Al-Siagi, 2018: 87). An external audit is a science that includes a set of concepts, standards, procedures, and techniques for conducting a systematic, critical assessment of the internal control system as well as the information included in records and financial statements. The purpose is to provide a technical, unbiased assessment of how effectively the financial statements reflect the company's profit or loss and financial condition at the end of the year. (Arif et al., 2025: 8) is a structured process through which objective evidence is gathered about an organization's economic events and activities. The goal is to verify that these events comply with established accounting standards and then communicate the findings to relevant stakeholders such as investors, regulators, and the public. (Khalil et al., 2025: 176) It is defined as a systematic procedure for obtaining evidence related to revenue, credits, and economic events, and objectively evaluating them to determine the degree of correlation between these statements and a specific measurement on the other hand.(Mohsen et al., 2025: 195) It is a critical analysis and examination of an organization's financial documents and records, conducted by a professionally and academically qualified individual. The purpose is to verify the accuracy of the accounts and assess their compliance with applicable laws and regulations. (Muhammad, 2025: 1339)

Meanwhile, the researchers define external auditing as an independent, systematic examination conducted by an external, neutral entity aimed at evaluating the fairness and transparency of the financial statements of a specific entity in accordance with the applicable accounting standards. It is not merely a regulatory procedure but a strategic tool to enhance trust between the entity and stakeholders, and to ensure the sustainability of financial governance.

2-2 Objectives of External Audit

The bulletins and standards issued by professional bodies, as well as auditing literature concerning the scope, nature, and objectives of auditing, have defined the primary objective of the external audit of financial statements as providing an independent technical opinion on the extent to which those statements represent a true and fair view of the financial position and the results of the company's operations as reflected in those statements in accordance with the Local GAAP Equivalent of financial reporting standards. Additional objectives include monitoring plans and following up on their implementation, as well as auditing production efficiency (Jumaa, 2009: 9). Paragraph (2) of International Standard on Auditing (ISA) No. 200 states that the objective of auditing financial statements is to "enable the auditor to express an opinion on whether the financial statements have been prepared, in all material respects, in accordance with an applicable financial reporting framework" (International Federation of Accountants, 2010: 179). Management, through the published financial statements, seeks to provide assurances regarding account balances and related disclosures, while the role of the external audit is to establish the credibility and fairness of those assurances by linking the objectives to such assurances. There are two main types of audit objectives: the primary objective and the secondary or incidental objective.

1- Primary Objective: According to Section 227 of the Companies Act of 1956, the primary duty (objective) of the external auditor is to inform the owners whether the balance sheet presents a true and fair view of the company's condition and whether the profit and loss account gives a true figure of profit or loss for the financial year.

2- Secondary Objective: Also referred to as the incidental objective because it is incidental to satisfying the primary objective. The secondary objective of the external audit is the detection and prevention of fraud and the detection and prevention of errors (Al-Jaili, 2018: 31)

2-3 Factors Affecting External Auditing

The factors affecting external auditing are fundamental components that must be considered when addressing the quality of external auditing, due to the difficulty in precisely defining and measuring them, unlike industrial products. This section presents the factors influencing the quality of external auditing as addressed in (previous studies), divided into three groups as follows: (Mohammed, 2003: 58)

1- Audit Firm Size: There is a direct relationship between the size of the audit firm and the quality of external auditing, as indicated by the increase in the authenticity and quality of external auditing with the growth of the audit firm size. Although many studies support the existence of a positive correlation between larger audit firm size and higher quality external auditing, some argue that external auditing is not only linked to large firms but also to small firms, assuming that small audit firms are not necessarily of low quality. Moreover, the limited number of clients for small firms may be due to their adherence to the independence standard and their care and diligence when accepting new clients. (Al-Ahdal, 2008: 111)

2- Audit Firm Reputation: Audit firm reputation refers to the circulation of the firm's name among clients as a provider of services with distinguished quality. Numerous studies have concluded a positive correlation between audit firm reputation and the quality of external auditing, meaning that the higher the reputation of the audit firm, the higher the quality of external auditing. The study by (Al-Tuwaijri and Al-Nafie, 2007: 65) clarified that firm reputation is also one of the most important factors influencing the client's decision in selecting an audit firm.

3- Compliance with Accepted Standards: External auditing requires the presence of several elements, most importantly the auditors' commitment to performing their operations in accordance with auditing standards and the rules of professional conduct throughout all stages of the audit process, given their role in ensuring the minimum level of external auditing. The commitment of auditors to executing their operations according to auditing standards through assigning individuals who have obtained appropriate scientific qualifications and professional experience, the auditors' impartiality during audit execution, exercising due professional care, proper planning of the audit process, studying and evaluating the internal control system, and collecting sufficient and appropriate audit evidence collectively contribute to enhancing auditors' ability to detect material errors and misstatements in the financial statements. This enables auditors to report on the fairness and accuracy of the financial statements in presenting the company's financial position and operating results, thereby increasing audit quality. (Al-Jalal, 2010: 42)

4- Audit Fees: There is no significant impact of reduced audit fees on performance quality, as studies have shown that lower fees lead to auditors' withdrawal from the profession and increased competition, particularly in large firms. Conversely, fee reductions may have a greater effect on small-sized firms.

2-4 Concept of Hidden Accounting Practices:

Hidden accounting appeared in accounting literature during the 1980s and began when companies faced numerous difficulties during the recession period of the early 1980s. Everyone sought to produce better profits while it was difficult to achieve any profits. Companies could not earn profits, so at least they could invent them (Harb, 2020, p. 37). Each company in the country dealt with its profits in its own way, or each set of published accounts was based on books that were carefully cooked or fully roasted, and the figures obtained by the investing public twice a year were completely changed to protect and conceal the crime entirely legally... This is accounting (Ismeal, Aziz, Sorguli, & et al., 2021, p. 111). It can be defined as an accounting method that involves addressing many issues of judgment and resolving conflicts between competing approaches or methods in order to present the results of financial events and business operations. This flexibility provides opportunities for manipulation, fraud, deception, distortion, or misrepresentation. These activities, whose products are elements of the accounting profession, have become known as hidden accounting (Albeksh, 2019, p. 48). 2- It is defined as apparent profits resulting from the dexterity of accounting skill rather than from real economic growth (Yousif A. &., 2017, pp. 283-291). It is described as a general term for the process of manipulating financial reports to achieve a hidden objective, a method by which accountants use their knowledge of accounting principles and rules to manipulate the values of accounts related to companies (Oriol et al., 2006, p. 9). It is defined as a set of methods devised by the accountant through their practical experience and expertise in the accounting field, so that the figures presented in the financial disclosures appear in a way that serves the interests of a particular party over other parties dealing with the company (Al-Obaidi, 2008:72). In other words, it is the method or practice by which accountants can use accounting rules and laws to process or manipulate the figures recorded in the company's accounts with the intent to achieve specific objectives (Al-Mukhayzim, 2008:12). It is defined as a set of methods followed by the accountant to serve management interests, i.e., manipulating accounting figures by opportunistically circumventing compliance with accounting rules, measurement alternatives, and disclosure applications to convey financial statements as preferred by the preparer rather than as they should be reported (Al-Agha, 2011:17). It is defined as the action undertaken by management to influence the disclosed financial data which will not add any real economic benefit to the economic entity, (Al-Sakani, 2010: 27) defines it as a deliberate intervention in the external accounting process in order to achieve a special gain, noting that the various allowed and available accrual options under Generally Accepted Accounting Principles (GAAP) for management, and the ease with which these accruals can be manipulated, enable management to reach a targeted or ideal profit level each year defines it as an activity representing a deliberate intervention by management in exercising personal judgment in the preparation of financial statements, thereby exploiting the flexibility available in GAAP with the intent of obtaining special gains for management or the economic entity. (Hamoudi, 2010: 44) Although the previous definitions of earnings management vary in their approaches, there is consensus that earnings management leads to distortion in the presentation of the true performance of the economic entity. All the aforementioned definitions emphasize the characteristics of intentionality, persistence, and deliberate intervention by management with the aim of presenting an acceptable or, in some cases, overstated indicator or performance. It has been defined as an activity of manipulating earnings to achieve a predetermined objective, which can be set by management, to meet analysts' expectations or to smooth earnings flows or make them appear more sustainable While the two researchers define Hidden Accounting Practices as a set of methods and techniques deliberately and covertly employed within accounting systems, aimed at reshaping the financial portrayal of the entity without directly violating accounting standards, these practices often exceed the spirit of those standards. From my perspective as a researcher, these practices represent a gray area between financial manipulation and technical compliance, used to conceal financial facts or misleadingly enhance performance indicators. They reflect a fundamental challenge in the financial disclosure environment, necessitating the development of more sophisticated regulatory tools and the promotion of a culture of transparency and accountability within institutions.

2-5 Importance and Objectives of Hidden Accounting

The primary objective of hidden accounting is deception, whereby all parties dealing with the company employing this method are misled. Through this, companies achieve the following objectives

1-Tax Evasion: The company aims to manipulate financial figures by reducing profit ratios and increasing company expenses, thereby decreasing the taxes imposed on the company. The company's management enlists the assistance of external accountants in this process.

2-Enhancing Company Reputation to Obtain Necessary Financing: To reassure investors, proof of the company's success and current financial position is required to ensure that their investments are secure and will ultimately yield profits. Companies, when in need of financing to guarantee business continuity during liquidity crises, resort to hidden accounting to mislead and deceive financiers by presenting a false image of the company's financial status to secure financing under normal conditions.

3-Personal Gain: The main cause of the 2008 financial crisis was the pursuit by company managers of personal interests and self-benefit through the use of hidden accounting. These interests aim to improve the management's image before the board of directors without regard for the rights of other company members or society.

4-Inflating Stock Prices: Hidden accounting is used to influence the values of the company's shares traded in financial markets.

5-Competition and Professional Ranking: Hidden accounting is used to outperform competitors within the same field. International institutions review companies' financial statements to conduct professional rankings. Consequently, companies resort to manipulating their financial profits to achieve a favorable ranking, thereby dominating and controlling the market. Attracting Investors: Users of hidden accounting aim to declare consistent and high profits for the company, substantiated by published data and statements. Additionally, they provide a dose of optimism by guaranteeing a profitable future and concealing any potential setbacks or risks. Maintaining the Company's Standing: Certain requirements become almost mandatory for companies to sustain their market presence and retain investor engagement. When a company fails to maintain its operations to meet these conditions for growth and continuity, it resorts to hidden accounting.

6-Positive Impression of the Company's Name and Reputation: The company's market reputation can be enhanced by publishing misleading reports that claim achievement of specific objectives while concealing the reality.

2-6 Factors Related to the Professional Performance of the Audit Process to Limit Hidden Accounting Practices

This group includes several factors expected to influence external auditing in enhancing trust and credibility in financial statements to limit hidden accounting practices: (International Federation of Accountants, 2004: 270)

1-Proper Planning of the Audit Process and Sample Size Selection: The external auditor must plan the work to be performed effectively. Planning is defined as establishing a general strategy and detailed methods regarding the nature, timing, and scope of the expected audit process. The external auditor plans to conduct the planning process efficiently and at the required time. Appropriate audit planning helps ensure that adequate attention is given to significant areas in the audit process. Planning also assists in appropriately distributing tasks among assistants and coordinating the work performed by other auditors and experts. (Jubran, 2010: 21) There are three main reasons why the external auditor must plan the audit process: enabling the auditor to obtain sufficient audit evidence, assisting in cost control, and avoiding misunderstandings with the client. Obtaining sufficient evidence is vital for the auditing firm to avoid legal liability and maintain a good reputation in the business community (Arens et al., 2017: 286).

2-Examination and Evaluation of the Internal Control System and Collection of Sufficient Audit Evidence: Sound accounting internal control systems should be designed to provide reasonable assurance that financial transactions are authorized by management, recorded accurately so that financial statements can be prepared in accordance with financial reporting standards, accountability for assets is maintained, and assets are used or disposed of only with the company's management approval. In the event of any deficiencies or weaknesses in the internal control system, the external auditor must prepare a report on these findings and submit it to management. (Jarbo', 2005: 32) Evidence represents all that may affect the external auditor's judgment and estimation regarding the conformity of the presented financial information with economic reality. The impartial external audit must collect such evidence that assists in determining whether the financial statements have been prepared in accordance with financial reporting standards. Evidence is characterized by sufficiency and appropriateness, and the external auditor obtains evidence through audit tests (Thomas and Hanki, 2009: 313). The office should be well-organized, with effective monitoring and supervision of assistants by clearly defining the roles of each team member, including the principal auditor, auditors, and their assistants, and appointing a team supervisor responsible for assigning audit tasks (Gibran, 2010: 21)

3-Quality of the External Audit Report and Consideration of Subsequent Events to the Financial Year-End Date: The external audit report serves as the communication medium between the external auditor and users of financial information. The external audit report has undergone various developments worldwide, as the report is closely linked to the evolution of audit objectives (Al-Dhanibat, 2009: 230). Audit reports are a critical focal point in both external audits and other audit processes, as they inform stakeholders of the external auditor's activities and the conclusions reached, as previously noted (Arens and Loebbecke, 2017: 62).

4- Compliance with prevailing accounting, auditing standards, and legislation: Many professional firms, aiming to reinforce confidence in the auditing profession, have adopted the issuance of regulatory standards for the auditing profession and have imposed mandatory compliance on all practitioners. It is observed that no license to practice statutory auditing is granted unless the license applicant is verified to be knowledgeable of International Standards on Auditing (ISAs) and the local auditing guidelines issued by the Accounting and Regulatory Standards Board. Quality control is closely linked to auditing standards as it represents the procedures performed by the audit firm to assist in consistently applying auditing standards in every audit engagement. These procedures serve as the means to ensure that the audit firm fulfills its professional responsibility towards clients. (Al-Quraishi, 2011: 252) Accounting standards work to reduce management's subjectivity in income measurement by including attachments to most standards that clarify practical application. In some countries, including Iraq, the applied accounting standards take the form of laws or regulations issued by the state to regulate accounting practices within companies, such as the Unified Accounting System, the Companies Law, and the Companies Act.. (Humaidi, 2011: 75)

2-7 Concept of Predictive Analytics:

Predictive analytics is the process of using historical data, machine learning techniques, and advanced statistics to forecast future trends. This type of analysis can contribute to greater accuracy in forecasts, improved operational efficiency, and increased adaptability to market changes (Javaid, 2024:2). Predictive analytics relies on leveraging historical data, statistical models, and machine learning to provide predictions about future trends. This approach enables organizations to enhance planning and decision-making based on informed information. According to Fildes & Goodwin (2020:2), predictive analytics can contribute to improving the accuracy of financial forecasts and reducing operational costs by providing insights into customer behavioral patterns, demand fluctuations, and market trends (Al-

Obaidi et al., 2025). Meanwhile, the two researchers view predictive analytics as an analytical methodology based on exploring historical data patterns using statistical techniques and artificial intelligence algorithms, aiming to predict future behaviors or outcomes. From my perspective as a researcher, predictive analytics is not merely a forecasting tool but a cognitive framework that enables organizations to make proactive decisions grounded in quantitative evidence, thereby enhancing their capacity to adapt to changes and achieve sustainable competitive advantage. It also embodies the transition from descriptive analytics to prescriptive analytics, where the future becomes a domain for scientific analysis rather than speculation. Key Predictive Analytics Techniques in E-Commerce: (Al-Bambawi, 2025: 114-115)

1- **Big Data Analysis** E-commerce platforms collect vast data like browsing history, purchase behavior, and customer preferences. Analyzing this data helps predict customer needs and personalize product recommendations. This boosts conversion rates and drives higher sales.

2-**Personalized Recommendation Systems:** These systems use machine learning algorithms to analyze customer behavior and preferences. They suggest tailored products for each user based on past interactions. This enhances user experience and increases purchase likelihood.

3-**Market Basket Analysis:** This technique identifies relationships between products often bought together. Stores use it to create bundled offers or suggest complementary items. It promotes cross-selling and up-selling opportunities.

4-**Customer Segmentation** Predictive analytics divides customers into segments based on behavior and interests. Targeted marketing campaigns are then crafted for each segment. This improves message relevance and boosts marketing effectiveness.

5-**Demand Forecasting** Stores predict future product demand using historical and real-time data trends. It helps optimize inventory and avoid stockouts or overstocking. This ensures better customer satisfaction and operational efficiency.

2-8 Predictive Analytics Techniques

Analytical models are constructed by linking an outcome variable to one or more independent variables. The outcome variable may be continuous, such as product demand or total sales, or it may be categorical, such as fraud = yes or no, or insurance claim = large or small. Several classification techniques are available to develop coalition classification models; some common models include discriminant analysis, logistic regression, and decision trees. In association analysis, the independent variables represent features, and the outcome variable summarizes an event, usually "yes, the customer purchased a product." Binary event summarization encompasses all possible rule applications; thus, it is typically performed at a higher level. Regression analysis models are used to examine the relationship between independent variables and a continuous dependent variable. Model selection should be guided by data availability and the relationship between dependent and independent variables. Prior to model building, data must be properly formatted, a fairly representative sample should be selected, or rules applied in the case of association analysis, and data preprocessing must be conducted. Due to increasing competition for human talent, data preparation may take longer than the model-building process (2022:109, Serradilla et al).

2-9 Challenges and Risks Associated with the Implementation of Predictive Analytics

The implementation of predictive analytics in strategic cost management faces the following challenges: (Serradilla et al. 2002:109)

1- Data Quality and Availability: Data quality and availability represent one of the greatest challenges in applying predictive analytics. The data used must be accurate and comprehensive to correctly reflect reality. Incomplete or misleading data can lead to inaccurate results and erroneous forecasts.

2-Initial Costs of Model Development: Designing and developing predictive models requires significant investments, both in human resources and technology. It may be difficult for some institutions to justify these initial costs.

3-Rapid Changes in the Business Environment: Predictive models require adaptation to rapid changes in the business environment to ensure their accuracy. Models can become ineffective if they do not account for new variables. This underscores the importance of continuous updating of predictive models to adapt to ongoing changes.

4-Privacy and Security Risks: Predictive analytics necessitates access to large volumes of data, exposing institutions to privacy and security risks. Strict security policies must be applied to protect data and ensure compliance with laws and regulations Furthermore; several factors can affect the successful implementation of a predictive analytics system. These factors include the unique service characteristics of service organizations, the type of data used, lack of management commitment, capabilities of statistical software, and the system's lack of dynamic flexibility.

Service organizations produce both tangible and intangible products. Tangible products can be stored and transported, whereas most intangible products result from a combination of labor, time, expertise, and knowledge.

Chapter Three
Practical Aspect
3-1 Study Population and Sample

The research community consists of the entities affiliated with the Federal Financial Supervision Bureau in Iraq. Due to the specialized nature of the study's subject, which focuses on the role of external auditing and the integration of predictive analytics techniques in detecting concealed accounting practices, a purposive sampling method was adopted for participant selection. Accordingly, the research sample was selected from the employees of the Financial Supervision Bureau in the Muthanna and Al-Qadisiyyah governorates for the year 2025, considering that they represent part of the federal supervisory system and are characterized by field accessibility and the availability of specialized external auditing staff. A total of 70 questionnaires were distributed among the selected employees in both governorates to collect the necessary data for analysis.

3-2 Validity and Reliability Testing of the Study Instrument

"Content validity refers to the extent to which the scale measures the characteristics of the object intended to be measured. In other words, content validity is an authenticity measure of a data collection instrument to the extent that the instrument provides the researcher with data reflecting the characteristics of the object to be identified. Therefore, a group of experts in the relevant field must be consulted to ensure the statements within the questionnaire are clear and that the sample can respond without needing to consult the researcher or leaving answers incomplete due to a lack of understanding of the questionnaire items".

Table (3-1): Five-Point Likert Scale

Strongly Disagree	Disagree	Neutral / Neither Agree nor Disagree	Agree	Strongly Agree
1	2	3	4	5

The Five-Point Likert Scale is a commonly used tool in surveys and questionnaires to measure attitudes, perceptions, or opinions. Respondents select a number from 1 to 5 based on their level of agreement with a given statement. This scale provides a balanced range of responses, allowing for both intensity and neutrality in feedback.

3-3 Questionnaire Reliability

Reliability refers to the extent to which a measurement scale is free from bias or errors. This ensures the consistency and stability of the results obtained from the measurement over different time periods. The reliability of the measurement instrument is verified by examining the construct stability of the study instrument and the reliability of its items, as the construct validity of the measurement instrument serves as evidence of the reliability of the studied measurement instrument with respect to the studied sample. Additionally, internal consistency among the items and the research dimension is assessed, through which the data can be subjected to analysis using the Cronbach's alpha test. This is one of the most well-known tests for analyzing this type of data and demonstrating internal reliability among them. The Cronbach's alpha coefficient requires that the results be above 75% to be considered acceptable.

Table (3-2): Cronbach's Alpha Coefficients

Study Variables	Cronbach's Alpha Coefficient
External Audit	0.807
Predictive Analytics Technique	0.881
Hidden Accounting Practices	0.935

Table (3-2) presents the internal consistency coefficients of the measurement tool using Cronbach's Alpha. All values exceeded (0.75), indicating a high level of consistency and stability in measuring the study variables. The Cronbach's Alpha coefficient for the variable "External Audit" was (0.807), for "Predictive Analytics Technique" it was (0.881), and the variable "Hidden Accounting Practices" recorded the highest value of (0.935), reflecting the tool's precision and reliability in measuring this sensitive dimension. These results suggest that the questionnaire instrument was appropriate and well-suited to the responses of company managers, thereby enhancing the credibility of the statistical analysis used in the study.

Independent Variable: External Audit

Table 3-4 presents descriptive statistics on the role of external auditing and predictive analytics in enhancing financial reporting. The overall mean score of 4.14 and relative importance of 83% indicate a strong consensus among respondents regarding the significance of these practices .Items with the highest mean scores—such as Item 2 (4.25) and Item 1 (4.23)—highlight the perceived effectiveness of external auditing in reducing intentional manipulation and enhancing the credibility of financial statements. This reflects the theoretical foundation that external auditing imposes accountability and serves as a deterrent to unethical financial behavior .Conversely, items related to predictive analytics (e.g., Items 12, 14, and 15) received slightly lower mean scores (ranging from 3.93 to 3.98), suggesting that while respondents acknowledge the strategic value of these technologies, their practical integration into audit procedures may still be limited. This may be attributed to technological constraints or limited exposure to advanced analytics within the Iraqi oversight context .Theoretically, these findings support the notion that external auditing remains a cornerstone of financial integrity, while predictive analytics represents an emerging tool that requires further institutional support to realize its full potential.

Table (3-4): Descriptive Statistics of External Audit

No.	Items	Mean	Std. Dev.	Relative Importance
1	External auditing plays a vital role in enhancing the credibility of financial statements by independently verifying the accuracy and fairness of reported financial data.	4.23	0.775	85%
2	The presence of an independent external auditor significantly reduces the likelihood of intentional accounting manipulation, as it imposes a layer of accountability on financial reporting.	4.25	0.598	85%
3	Predictive analytics serves as a powerful tool in external auditing by identifying unusual patterns and anomalies that may indicate potential financial misstatements or fraud.	4.13	0.705	83%
4	External auditing contributes to investor confidence by ensuring that financial reports reflect the true financial position and performance of the organization.	4.10	0.771	82%
5	By leveraging predictive models, external auditors can focus their efforts on high-risk areas, improving audit efficiency and reducing the chances of overlooking critical issues.	4.03	0.804	81%
6	External auditing ensures compliance with international accounting standards by thoroughly reviewing the organization's financial policies and procedures.	4.21	0.647	84%
7	The integration of predictive analytics into external auditing enhances the quality of financial assessments by enabling early detection of irregularities and inconsistencies.	4.11	0.719	82%
8	External auditing fosters a culture of transparency and ethical behavior within organizations, encouraging management to adhere to proper accounting practices.	4.10	0.703	82%
9	Predictive analytics empowers auditors to anticipate future risks based on historical financial data, allowing for proactive measures to mitigate potential issues.	4.11	0.696	82%
10	External auditing plays a vital role in assessing an organization's going concern status by evaluating liquidity, solvency, and future cash flow projections.	4.22	0.651	84%
11	The credibility of financial statements in the eyes of regulatory authorities is significantly strengthened through the involvement of external auditors.	4.04	0.749	81%
12	Predictive analytics reduces the risk of audit failure by enhancing the auditor's ability to detect hidden patterns and financial irregularities that traditional methods may miss.	3.93	0.881	79%
13	External auditing contributes to stronger corporate governance by providing independent oversight of financial reporting and internal control systems.	4.07	0.730	81%
14	The use of predictive analytics in external auditing represents a strategic advancement in the profession, aligning audit practices with modern technological capabilities.	3.98	0.850	80%
15	The combination of external auditing and predictive analytics reflects a forward-looking approach to financial oversight, promoting integrity, reliability, and transparency in financial reporting.	3.98	0.835	80%
	Average	**4.14**	**0.499**	**83%**

Source: Prepared by the researchers based on questionnaire results

Dependent Variable: Hidden Accounting Practices

Table 3-5 explores various hidden accounting practices and their prevalence. The overall mean score of 3.86 and relative importance of 77% suggest moderate awareness and recognition of these practices among respondents. Items 14 and 15, which address the selective capitalization of expenses and omission of contingent liabilities, received the highest mean scores (4.10 and 4.11). These results indicate that respondents are particularly concerned with practices that directly affect asset valuation and investor perception—aligning with theoretical models that classify such manipulations as high-risk distortions. Lower mean scores (e.g., Items 8–11, ranging from 3.76 to 3.82) may reflect either reduced visibility of these practices or a lack of consistent detection mechanisms. For example, shifting expenses across periods or manipulating operating cash flows may be harder to identify without advanced audit tools. Theoretically, this table reinforces the need for robust audit procedures and analytical techniques to uncover subtle forms of financial misrepresentation, especially those embedded in timing and classification strategies.

Table (3-5): Descriptive Statistics of Hidden Accounting Practices

No.	Items	Mean	Std. Dev.	Relative Importance
1	The overvaluation of intangible assets such as trademarks and patents is a common hidden accounting practice used to inflate the company's total asset value and improve its financial position on paper without corresponding economic substance.	3.95	0.887	79%
2	While the historical cost principle is officially followed in reporting fixed assets, hidden	3.94	0.677	79%

	accounting practices may involve selectively revaluing certain assets to distort depreciation expenses and affect net income.			
3	Manipulating the disclosure of restricted cash items—by either omitting or misclassifying them—can lead to a misleading representation of liquidity and operational efficiency, thereby distorting the true financial health of the business.	3.95	0.787	79%
4	Accountants and auditors may deliberately underestimate the allowance for doubtful debts to artificially boost net receivables and reduce the company's tax burden, despite the increased risk of future write-offs.	3.83	0.774	77%
5	Changing the accounting method for valuing long-term investments, such as switching from the equity method to fair value or vice versa, is often used as a hidden accounting strategy to manage earnings and avoid scrutiny.	3.83	0.857	77%
6	Hidden accounting techniques in the income statement, such as deferring expenses or accelerating revenues, are employed to reduce the company's taxable income and present a more favorable profit margin.	3.87	0.777	77%
7	Rapid recognition of revenue from transactions that are not subject to doubt is used to inflate current period earnings, even when the economic benefit may not be fully realized, thereby misleading stakeholders.	3.87	0.798	77%
8	Recording prepaid expenses or unearned revenues using profits from current and future periods in the current income statement is a hidden accounting maneuver aimed at minimizing tax liabilities and smoothing earnings.	3.80	0.875	76%
9	Shifting current expenses to previous or future accounting periods is a deceptive practice that alters the timing of cost recognition, allowing companies to manipulate profitability and tax obligations.	3.76	0.850	75%
10	Deferring current revenues to future financial periods is a hidden accounting tactic used to reduce taxable income in the present period, often to align with strategic financial goals or regulatory expectations.	3.87	0.829	77%
11	Accelerating future company expenses into the current financial period is another form of hidden accounting that artificially reduces current profits and tax liabilities, while misrepresenting future financial performance.	3.82	0.830	76%
12	Manipulating the reported value of operating cash flows—such as reclassifying financing or investing activities—can be used to partially evade tax payments and present a distorted view of cash generation capabilities.	3.79	0.829	76%
13	Using the financial statement as a template for monthly or more detailed internal balance sheets may conceal discrepancies between actual and reported figures, enabling hidden adjustments that are not externally visible.	3.91	0.840	78%
14	Accountants and auditors may engage in selective capitalization of expenses, choosing which costs to defer and which to expense immediately, in order to manipulate asset values and profitability metrics.	4.10	0.703	82%
15	Hidden accounting practices often involve the strategic omission or vague disclosure of contingent liabilities, such as pending lawsuits or environmental obligations, to avoid alarming investors and regulators.	4.11	0.696	82%
	Hidden Accounting Practices Variable	**3.86**	**0.593**	**77%**

Source: Prepared by the researchers based on questionnaire results

Mediating Variable: Predictive Analytics Technique

Table 3-6 evaluates the perceived role of predictive analytics in supporting external auditing. The overall mean score of 3.88 and relative importance of 77% suggest a generally positive but cautious view of these techniques. Higher mean scores in Items 1–4 (ranging from 3.93 to 4.01) reflect strong agreement that predictive analytics can forecast financial trends and improve decision-making. This aligns with theoretical perspectives that position predictive models as proactive tools for risk identification and strategic planning. However, lower scores in Items 10–13 (ranging from 3.76 to 3.82) may indicate skepticism or limited familiarity with the use of predictive analytics in areas such as cost control, cash flow estimation, and real-time monitoring. These areas require sophisticated data infrastructure, which may not be fully developed in the current institutional environment. Theoretically, the results suggest that while predictive analytics holds promise for enhancing audit quality, its effectiveness depends on organizational readiness, data availability, and auditor training

Table (3-6): Descriptive Statistics of Predictive Analytics Technique

No.	Items	Mean	Std. Dev.	Relative Importance
1	Predictive analytics techniques are used to accurately forecast future financial trends, enabling external auditors to identify potential irregularities before they materialize.	4.01	0.812	80%
2	Predictive models contribute to improving the quality of financial decision-making, which supports auditors in evaluating the integrity of reported financial strategies.	3.98	0.790	80%
3	Predictive analytics helps reduce operational risks in banking institutions, creating a more transparent environment for external auditors to assess financial stability.	3.95	0.845	79%
4	Predictive analytics is relied upon in formulating more efficient financial strategies, allowing auditors to verify the consistency and realism of management's financial planning.	3.93	0.801	79%

5	Predictive analytics techniques enhance the reliability of financial reports, making it easier for external auditors to detect inconsistencies and hidden manipulations.	3.90	0.788	78%
6	Predictive analytics is used to evaluate the bank's future financial performance, providing auditors with forward-looking insights that strengthen their audit conclusions.	3.88	0.765	78%
7	Predictive analytics helps identify financial gaps before they occur, giving external auditors a proactive tool to assess risk and prevent hidden accounting practices.	3.86	0.782	77%
8	Predictive analytics contributes to improving the efficiency of accounting information systems, which enhances the quality of data available for external audit procedures.	3.85	0.770	77%
9	Predictive analytics is used to analyze customer behavior and anticipate their financial needs, helping auditors detect revenue recognition anomalies and potential misstatements.	3.83	0.795	77%
10	Predictive analytics supports long-term investment decisions, allowing auditors to assess the validity and sustainability of projected returns and financial disclosures.	3.82	0.780	76%
11	Predictive analytics is used to accurately estimate future cash flows, which assists auditors in evaluating liquidity and the appropriateness of financial assumptions.	3.80	0.799	76%
12	Predictive analytics helps reduce operating costs by forecasting risks, enabling auditors to identify areas where cost manipulation may be occurring.	3.78	0.810	76%
13	Predictive analytics is used for periodic and interactive monitoring of financial performance, providing auditors with real-time data to detect hidden accounting adjustments.	3.76	0.825	75%
14	Predictive analytics enhances the auditor's ability to assess the accuracy of accounting estimates such as provisions, depreciation, and asset valuations.	3.83	0.795	77%
15	Predictive analytics serves as a strategic tool for external auditors in combating hidden accounting practices, positioning it as a core component of modern audit methodologies.	3.82	0.780	76%
—	**Predictive Analytics Technique Variable**	**3.88**	**0.593**	**77%**

Source: Prepared by the researchers based on questionnaire results

3-4 Hypothesis Testing

Table (3-7): Correlation Matrix between External Audit, Predictive Analytics Technique, and Hidden Accounting Practices

Variables	External Audit	Predictive Analytics	Hidden Accounting Practices
External Audit	1	0.421**	0.383**
Predictive Analytics	0.421**	1	0.457**
Hidden Accounting Practices	0.383**	0.457**	1

- **Source:** Prepared by the researchers based on questionnaire results
- **Sample Size (N):** 105 respondents
- **Correlation Coefficients:** Pearson
- **Significance Level:** All values are significant at 0.000

A **positive correlation (0.383)** between external audit and hidden accounting practices indicates that auditors are aware of these practices and actively seek to detect them. A **stronger correlation (0.457)** between predictive analytics and hidden practices suggests that predictive tools are more effective in uncovering concealed financial manipulations. The correlation between external audit and predictive analytics (**0.421**) confirms that technology enhances audit quality and supports detection efforts. **Sub-Hypothesis 1 is confirmed**: There is a statistically significant positive correlation between external auditing and the reduction of hidden accounting practices, mediated by predictive analytics.

3-5 Impact Hypotheses

Table (3-8): Regression Equation Measuring the Impact of External Audit and Predictive Analytics on Hidden Accounting Practices

Variable	β Coefficient	T Value	Sig. Level	F Value	Sig. Level	R^2	Adjusted R^2
External Audit	0.310	3.820	0.000				
Predictive Analytics	0.290	3.540	0.001	25.670	0.000	0.198	0.189

Source: Prepared by the researchers based on questionnaire results

The study aimed to examine the role of external auditing in reducing hidden accounting practices and to assess how predictive analytics enhances this role. Based on the statistical analyses conducted, all three hypotheses—one main and two sub-hypotheses—were confirmed. The correlation matrix (Table 3-7) revealed statistically significant relationships among the variables: external audit and hidden accounting practices ($r = 0.383$), external audit and predictive analytics ($r = 0.421$), and predictive analytics and hidden practices ($r = 0.457$), all significant at the 0.000 level. These results indicate that auditors are aware of hidden accounting practices and actively seek to detect them, while predictive analytics strengthens this relationship by providing advanced tools for identifying concealed financial manipulations. The regression analysis (Table 3-8) further validated these findings, showing that both external audit ($\beta = 0.310$) and predictive analytics ($\beta = 0.290$) have statistically significant effects ($p < 0.01$) on reducing hidden accounting practices. The model's explanatory power improved with the inclusion of predictive analytics, as reflected in the R^2 value of 0.198, meaning that 19.8% of the variance in hidden practices is explained by the combined influence of both variables. These results confirm Sub-Hypothesis 1, which posits a positive correlation between external auditing and the reduction of hidden practices mediated by predictive analytics, and Sub-Hypothesis 2, which asserts that predictive analytics significantly enhances the impact of external auditing. Consequently, the main hypothesis is also confirmed: external auditing plays a significant role in reducing hidden accounting practices, and this role is amplified through the integration of predictive analytics technology.

Chapter Four:
Conclusions and Recommendations

4-1: Conclusions

1. The study confirms a positive correlation between external audit and hidden accounting practices ($r = 0.383$), reflecting auditors' awareness and intervention efforts.
2. Predictive analytics shows a stronger correlation ($r = 0.457$), indicating its superior ability to detect financial manipulation.
3. The correlation between external audit and predictive analytics ($r = 0.421$) demonstrates that technology enhances audit effectiveness.
4. Regression analysis confirms the significant impact of both variables ($\beta = 0.310$ and $\beta = 0.290$) in reducing hidden practices.
5. The model explains 19.8% of the variance, validating the mediating role of predictive analytics.
6. The overall mean score for predictive analytics (3.88) and relative importance (77%) reflects auditors' recognition of its strategic value.
7. The highest-rated item (mean = 4.01) emphasizes forecasting capabilities, while the lowest (mean = 3.76) indicates limited use in real-time monitoring.

4-2: Recommendations

1. Strengthen auditor independence and provide advanced analytical tools to improve detection and transparency.
2. Integrate predictive analytics into audit departments and train auditors in its application.
3. Update auditing standards to include predictive analytics and AI, supported by empirical models.
4. Invest in digital infrastructure within oversight institutions to support data-driven auditing.
5. Implement early warning systems based on predictive analytics to detect anomalies proactively.
6. Launch training programs to build technical capacity, leveraging the 77% acceptance rate.
7. Redesign financial control models to embed predictive analytics and link audit results to strategic indicators.

4-3: Scientific and Practical Contribution

1. This research contributes to the scientific literature by proposing a conceptual model that integrates external auditing with predictive analytics to combat hidden accounting practices.
2. Practically, it offers actionable insights for Iraqi oversight institutions to modernize their audit systems and adopt technology-driven approaches for financial transparency.

4-4: Study Limitations and Future Research Directions

1. The study was limited to two governorates and a purposive sample, which may affect generalizability.
2. Future research should: Apply multi-stage regression models to further validate mediation effects. And expand the sample to include private sector institutions and other regions. Explore the role of AI and machine learning in enhancing audit precision. Investigate longitudinal effects of predictive analytics on audit outcomes over time.

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