



A REVIEW STUDY OF BIG DATA ANALYSIS TOOLS IN ACCOUNTING AUDITING

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Article history:	Abstract:
Received: 28 th August 2025	How can big data analysis tools be adopted in accounting auditing in companies, based on the literature that focused on the importance of big data and accounting auditing, the study aimed to provide a comprehensive framework for big data analysis tools in accounting auditing, as the study provided a set of previous literature related to its topics and on the basis of the study reached several results represented in that there is an urgent need to update and develop the relationship between big data and accounting auditing for financial accountants, This contributes to improving the decision-making process, which began to enhance the capabilities of the advisory role of accountants, increase their abilities to think creatively and strategically, and provide the required assistance in making accounting decisions in line with the capabilities of companies and professional bodies to keep pace with future developments. The results also showed that there is an urgent need to transform the role of financial accountants by developing their capabilities in the advisory role of accountants on strategic thinking and providing critical assistance in making accounting decisions, and therefore it is important to update the accounting programs of companies in line with its capabilities in managing big data and enhancing the capabilities of auditors to use modern technologies adopted and preferred by customers to enhance the quality of auditing and provide added value to customers.
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INTRODUCTION

Accounting auditing has become the focus of attention of modern management thought thanks to its close link to the efficiency and effectiveness of companies' performance in achieving their goals and achieving their core visions and values through financial reporting (Free et al., 2020). This has led to increased attention and priority given to auditing and financial reporting in management thought (Camilleri, 2018). The success of corporate performance It depends on the level of performance of its employees and their organizational commitment to ethical rules, and therefore the company is responsible for developing and strengthening its capabilities in the field of accounting auditing and achieving balance and cooperation between its interests in order to enhance its institutional performance, in light of the efficiency of the financial reports it produces (Soomro & Shah, 2019). Big data is an important element in this context, as it can be used to analyze and evaluate financial performance and risk and improve accounting audits (Salijeni et al., 2021; Ibrahim et al., 2021). Big data enables companies to use machine learning and artificial intelligence techniques to detect unusual patterns, potential imbalances and manipulations in financial statements, enhancing the accuracy and efficiency of accounting audits and contributing to organizational performance (Oprea et al., 2021).

Individuals are aware of the importance of auditing and maintaining it and its basic elements is one of the main foundations through which to improve the performance of companies in light of the efficiency of financial reporting and enhance their stability and prosperity (Ahmad& Sulaiman, 2023). Auditing aims to use available resources in all its forms in order to achieve an effective audit process that enhances the performance of companies (Hegazy et al., 2022). In addition, auditing is one of the effective tools for collecting accurate information about innovative companies and startups (Kroon et al., 2021; Ukwueze et al., 2022). Thus, the accounting audit process is one of the accounting tools that enhance the company's exports and returns, where data is collected, organized and analyzed to determine the requirements of financial correction and determine the necessary procedures to deal with them. Hence, the idea of the quality of accounting information emerges as a symbol of one of the basic tools for managing information about properly investing money in the financial markets. Using big data, the quality and efficiency of accounting audits can be enhanced



by analyzing data and discovering patterns and valuable information that contribute to improved financial performance and strategic decision-making (Khodayareyeganeh et al., 2023; Allahyarov, 2023).

STUDY PROBLEM

Auditing is crucial to the success of companies in their various fields, especially in the financial field, due to its regulatory importance in reducing the risks of fraud, manipulation and embezzlement that companies can face, and also contributes to the decision-making process by ensuring the safety and validity of corporate information. Companies differ in their physical, moral, social and financial characteristics, and therefore they need to direct their resources to enhance their resources. Its ability to face threats and achieve outstanding performance, and this requires a deep understanding of the audit process to improve its performance. With big data, companies can leverage the analysis of this data to enhance the quality and efficiency of audits. For example, machine learning techniques and big data analytics can be used to detect unusual or suspicious patterns in financial statements, thereby enhancing the effectiveness of auditing and detecting any potential risks. In addition, big data can help enhance decision-making by providing advanced analytics and providing strategic insights that support making the right decisions and achieving continuous improvement in a company's financial performance. Therefore, the problem of the study can be formulated in the fundamental question (**can big data analysis tools improve the auditing process**).

The importance of the study.

The importance of the study stems from the fact that it represents one of the studies through which companies can be directed in order to realize the value of big data management to enhance accounting auditing, which can occur in their internal operations, which may lead to the accumulation and bankruptcy of companies, and this matter leads to a direct impact on the results of the company's financial business and its continuity in growth and prosperity.

OBJECTIVES OF THE STUDY

The main objective of the study is to reveal a comprehensive review of big data analysis tools in accounting auditing, while the other objectives of the study are:

1. Highlight the concept of big data and accounting auditing.
2. Identify the characteristics of the accounting audit process.
3. Statement of the objectives and results on which the previous literature on the topics of the study stand.

LITERATURE REVIEW

Big Data: The concept of Big Data originated not in the 2008 Chris Anderson editorial, nor in the founding of Apple in 1976, nor in Google in 1998. Rather, big data emerged in the 1950s with the advent of the so-called quantum revolution, which marked the first attempts to link relatively large sets of data using computer power (Barnes, 2013).

Big data (Katal et al., 2013) represents a large amount of data that requires new technology and structures so that value can be extracted from it through the process of capture and analysis. According to (ISO, 2017), big data is a collection of data that has special qualities that can't be effectively handled with conventional technologies in order to separate and profit from it, such as size, speed, diversity, honesty, and value. Large amounts of organized or organized data, as well as semi-structured or semi-structured, unstructured, and unstructured data, argued that (Sharma & Patro, 2022 ; Eser, 2022) referred to big data as data sets that can be captured, managed and processed only through public computers within an acceptable range

Accounting auditing: Accounting auditing is not a recent term emerging in the development of accounting and tax transaction systems, or a return to the prosperity of economic activities, but its origins go back to being a profession that has been practiced since ancient times such as the era of the pharaohs and the Greek and Roman eras, according to historical records. The masses were gathering in major squares, where they received revenues and expenses, allowing them to review the full accounts and verify their validity and the validity of their organization, and the Hajj seasons were also exploited in the time of the Companions to review Wali accounts and audits (Al-Shaima, 2022). On the other hand, the follow-up of the impact of the audit throughout history turned out to be the result of the urgent need for it in order to extend control by the heads of tribes or groups or owners of money and governments on those who collect payment or keep materials in stocks on their behalf, and it has been said that the audit is due to the governments of the ancient Egyptians and Greece who used the audit in order to ensure the validity of public accounts, and the auditor at the time listened to the entries installed in books and records to determine the extent of their safety from all manipulations and errors, and the following are true (Iman & Ahlam, 2022).

Boynton defined it as a systematic and objective process for obtaining evidence related to management's assertions about the facility's financial statements, and evaluating this evidence in an objective manner with the aim of verifying the extent to which these assertions conform to the specified standards, then communicating the results to the relevant authorities (Al-Shehna, 2015). Bonnault also defined it. ET GERMOND as a strict technical test in a constructive manner



by a qualified and independent professional, with the aim of giving a reasoned opinion on the quality and credibility of the financial information provided by the institution, and on the extent of respect for the applicable accounting rules, laws and principles in a true picture of the assets, financial position and results of the institution (Yura ,2015). Fatiha (2022) believes that creating audit hypotheses is a necessary process for solving audit problems and arriving at results that help us find a comprehensive theory for them. It is noted that audit hypotheses have not received sufficient attention as is the case in accounting hypotheses, so developing a set of hypotheses that take into account the nature of auditing and the type of problems it deals with, it is tantamount to creating a set of experimental hypotheses that must be subjected to critical study so that they can receive general acceptance by the profession. Table (1) shows a group of previous studies.

Table (1) Previous studies related to the variables of the study

Education	Objective of the study	Type of study	Study Sample	Results of the study
Gepp et al.,2018	When you use big data approaches to auditing, you'll discover that this field is not as popular as other related ones.	Field study	Auditors in mega technologies	We disprove the claim that auditors are hesitant to employ technology that are far more advanced than those that their clients have accepted.
Dagilienė& Klovienė,2019	Examine the regulatory plans for using big data analytics (BDA) and big data in external audits.	Exploratory study	Opinions of auditors, business clients and regulators regarding external audit practices and BDA	External auditors concentrate on processes in order to give business clients greater value in addition to complying with regulations.
Balios et al.,2020	Disclosure of key aspects of the impact of big data and data analytics on external audit	Analytical study	Auditors in institutions	Almost every facet of company strategy and decision-making in contemporary enterprises is impacted by big data and data analytics.
Joshi & Marthandan,2020	For the fundamentals of big data and the different analytical tools it offers that auditors and accountants would need to employ for ongoing and internal audits.	Analytical study	Audit data analytics, big data applications, and data analytics for internal auditors	the necessity of updating university accounting courses, professional accounting bodies, and providing guidance for future study.
Balios,2021	The impact of big data on accounting and auditing	Descriptive study	Key information providers for decision makers	Beyond the bookkeeping process, financial accountants must take on the role of primary information source for decision-makers. This enhances accountants' advising function, sharpens their strategic thinking skills, and offers vital support for managerial decision-making.



Ibrahim et al.,2021	Creating research, techniques, and accounting standards to stay up with the big data industry's fast expansion.	Analytical study	Possible reports of some stock exchange companies	Given that data is the foundation of accounting, there is a significant convergence between big data and accounting. The data constraints of accounting methods that depend on projections and guesses can be solved by big data and sophisticated analytics. Three accounting theories and big data have surprising similarities.
Chu& Yong,2021	Both accountants and auditors should use predictive analytical techniques to improve business knowledge and create predictions and estimations.	Analytical study	Data belonging to audit firms	Machine learning software solutions are being eagerly adopted by audit companies to read contracts, examine journal entries, and assist in the detection of fraud.
Mittal et al.,2021	Learn about the development of big data technologies by Indian practicing accountants for fraud and forensic accounting.	Survey	Practicing Accountants in India	Awareness of judicial accounting has a positive impact on practitioners' intentions to use it in fraud detection.
Al-Ateeq et al.,2022	Perceived utility and perceived ease of use, two aspects of the Technology Acceptance (TAM) model, are used in this study to investigate how big data analytics adoption in auditing is affected, and how this affects audit quality.	Applied study	External audit firms and offices in Jordan. In the end, 130	The association between perceived advantage and audit quality is mitigated by the use of big data analytics, but not the relationship between physical ease of use and audit quality.
Sun et al.,2024	Delve into the profound impact of the big data era on accounting and auditing, and accurately dissect the challenges and opportunities that accompany this development	Field study	Auditors in large companies	Organizations can enhance their ability to harness the potential of big data while mitigating the risks associated with it. Furthermore, collaboration among stakeholders, including regulators, industry associations and academia, is essential to foster innovation, knowledge sharing and industry-wide standards.

Source: Prepared by researchers

DISCUSSION OF RESULTS



It is clear from the results of previous studies that there is an urgent need to update and develop the relationship between big data and auditing accounting for financial accountants, in a way that contributes to improving the decision-making process, which seemed to enhance the capabilities of the advisory role of accountants and increase their abilities to think creatively and strategically and provide the required assistance in making accounting decisions in line with the capabilities of companies and professional bodies to keep pace with future developments.

The results also showed that there is an urgent need to transform the role of financial accountants by developing their capabilities in the advisory role of accountants on strategic thinking and providing critical assistance in making accounting decisions, and therefore it is important to update the accounting programs of companies in line with its capabilities in managing big data and enhancing the capabilities of auditors to use modern technologies adopted and preferred by customers to enhance the quality of auditing and provide added value to customers.

It is clear from the results of the previous literature that there is a clear convergence between big data and accounting auditing, as big data can transcend traditional accounting constraints and techniques, provide a complete strategic vision for decision-making, improve business strategies, and use analytics that reduce practices that do not benefit companies.

On the other hand, the results showed that companies can support their capabilities in using big data by reducing related risks through cooperation and alliance with regulatory and accounting bodies that support innovation, knowledge exchange and information to develop accounting standards and laws related to accounting auditing, which in turn improves the reputation and position of the company and supports its accounting performance.

RECOMMENDATIONS AND IMPLEMENTATION MECHANISMS

1. The need for companies and accounting bodies to keep pace with the changes in skills and knowledge necessary to develop their information in a manner consistent with the consulting skills and strategic thinking of accountants within the company.
2. The need for auditors to focus on adopting advanced technologies in the field of accounting and be familiar with modern developments and changes, especially with regard to big data analysis through the use of machine learning techniques to improve progress in providing high-level accounting services.
3. The need for stakeholders to cooperate in a way that contributes to promoting innovation and knowledge exchange in order to build cooperation between companies in order to develop and improve the skills of accountants and exchange ideas to promote and support standards at the public level.
4. The need to support awareness of the importance of accounting auditing and the benefits it provides to the company by detecting fraud and accounting manipulation, which requires the provision of training programs to develop accounting skills in big data management.
5. The need for companies to focus on harnessing the potential of big data, auditing and measuring its size, taking into account the risks associated with it, in a way that contributes to supporting strong security practices and defensive policies to ensure the confidentiality and integrity of information and respect for customer privacy.

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