



The Role of E-Governance Techniques in Audit Quality: E-Auditing as a Model

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Abstract:

This study aimed to examine both the theoretical and practical aspects of electronic governance techniques and their impact on audit quality. The role of electronic governance techniques in accomplishing the tasks for which the auditor is responsible has been illustrated by using electronic audit programs. The study also aimed to identify the most significant challenges and obstacles facing audit firms in Iraq, which hinder their adoption of modern electronic techniques in their auditing work.

The practical aspects addressed one of the main tools for data collection, within the framework of achieving the researcher's research objectives, as well as verifying the research hypotheses. The researchers relied on survey lists to seek the opinions of auditors and specialists in 8) of the largest auditing companies in Iraq within the framework of explaining the relationship between electronic governance techniques and audit quality.

The researchers' most important conclusions were that the success of implementing electronic techniques in auditing tasks depends not only on the quality of their implementation, but also on the availability of the means to ensure their success. The ability of Iraqi auditing firms to employ e-auditing in auditing tasks is negatively affected by several technical, human, and organisational challenges. Furthermore, the researcher concluded that the e-Auditing process is consistent with the requirements of the auditing profession and what is emphasised by international standards and the financial framework applicable in this field.

The researchers reached a set of recommendations, the most important of which is the need for Iraqi audit firms to adopt e-governance techniques, specifically e-auditing programs. It is also important to begin developing a comprehensive strategy that identifies the challenges they face to ensure their ability to adopt e-auditing in carrying out their audit tasks.

Keywords: E-Auditing, Audit quality, External auditing, e-Governance, Auditors.

1. Introduction:

In light of the technological developments currently taking place in the digital world, and their significant positive impact on the tasks performed in various fields, adopting e-governance techniques to carry out tasks in the field of oversight and auditing has become essential, especially given the positive results generated by these techniques. Many countries have focused on the development aspects of the electronic field by employing all the elements of success through increasing investment in this field and developing strategic plans, working to provide the necessary infrastructure, establishing awareness and educational programs, and providing material and human resources, as the availability of these elements will contribute to strengthening the regulatory aspect and reducing the amount of administrative complexities (Ammariya & Rachida, 2018). Qader pointed out the positive impact of electronic techniques on the auditing profession by identifying the risks of material misstatement and increasing the level of confidence among stakeholders, which constitutes an important basis in the policy-making and decision-making process and thus enhancing governance (Qader & Cek, 2024) (Qader & Cek, 2024). In turn, Al-Masoudi emphasised the importance of these techniques being suitable for auditing operations, particularly given their role in analysing a huge amount of data and their impact on enhancing quality, while emphasising the need for auditors to acquire knowledge and experience in this field, which will contribute to completing the auditing stages in accordance with approved professional standards (Al-Masoudi, 2023).

E-governance techniques are a modern trend aimed at administrative development and reform through multiple aspects, including accountability, transparency, openness, and communication, with the aim of achieving ideal results that may not be possible through traditional methods, which are often ineffective (Saparniene, 2013). Ahmed explained that the profession of auditing and controlling accounts is gaining new and positive opportunities in the quality of services provided to its clients through the use of advanced technology in auditing tasks, which contributes to developing skills and capabilities to meet the needs of auditing firms' clients (Ahmed, 2011).

The use of e-governance techniques in the field of auditing has become an important and essential matter for the auditor's success in performing his duties with the required speed and accuracy. Through electronic data processing using electronic programs and systems, which contributes to saving time and effort (Aridah et al., 2021). Furthermore, performing audit tasks electronically using modern technological techniques results in positive outcomes related to the auditor's independence and objectivity (Noureddine & Ben Talib, 2023).

Despite the important role played by these techniques in enhancing the efficiency and effectiveness of the external audit process, there are many obstacles and challenges facing audit firms, especially if we take into consideration Iraq's late classification according to the United Nations indicators for e-government databases, as Iraq's rank was (148) out of (193) countries included in the classification, while the e-participation index placed Iraq in the (179) rank out of (193) countries (United Nations, 2024), which in turn raises doubts about the possibility of actually applying e-governance techniques and employing them effectively in enhancing the quality of external audit tasks and upgrading them in audit firms operating in Iraq. Although the UNDP highlighted the role of modern techniques in Iraq's future aspirations, it noted the absence of current development plans or ideas, with numerous challenges hindering the optimal use of these techniques (Pizarro et al., 2023). Accordingly, the research problem was formulated through examining a set of questions that examined the extent to which e-governance techniques are applied in auditing tasks by auditing firms operating in Iraq, and identifying the challenges facing these firms that in turn prevent them from shifting towards e-governance techniques in the auditing process, and then determining the extent to which these firms' use of e-auditing affects the quality of the auditing tasks they perform.

From this standpoint, the researcher believes that it is possible to enhance the current development plans or ideas of Iraqi auditing companies by employing electronic governance techniques, specifically electronic auditing, for auditing purposes. This is particularly relevant given the rapid development of the labor market and the resulting repercussions on the external auditing profession. The importance of this paper lies in highlighting the significant role played by electronic techniques in the external audit process through the use of these techniques by auditors to ensure audit quality, which has not been adequately addressed, according to the researchers' point of view, in previous studies and literature. The paper will contribute to enriching the theoretical aspects as well as the practical aspects by examining the possibility of employing electronic auditing in auditing firms operating in Iraq, which contributes to strengthening audit quality and improving the accuracy and credibility of audited data. In turn, it will be reflected in enhancing transparency, preventing tampering with financial data, and thus reducing corruption and encouraging the use of modern technological techniques, especially at the present time, when Iraq is witnessing a remarkable shift towards adopting international standards.

To achieve the research objectives and test its hypotheses, the second section of this paper reviews the literature on E-Governance techniques and their impact on audit quality, drawing on a selection of relevant Arab and foreign studies. Section three explains the methodology used in its analysis and the mechanism used to select the sample, which consisted of leading audit firms in the profession, as well as the methods used in analyzing the research variables through survey lists.

2. Literature Review and Hypothesis Development:

2.1 Literature review:

With the remarkable development in the field of modern techniques and their relationship to external auditing, prior studies have played a crucial role in providing this study with fundamental concepts that have contributed to identifying the knowledge gap it seeks to address. The study (Mihoubi & Saoud, 2024) examined the impact of technological transformations on auditing and their compatibility with international standards in the field of the profession by employing blockchain technology as an e-governance technology. The study concludes that the possibility of employing modern technological techniques in the auditing process can be achieved by designing appropriate audit tools that are compatible with these techniques. The study (Al-Masoudi, 2023) addressed the role of artificial intelligence in audit quality and its impact on investor decisions. It aimed to demonstrate the extent to which the quality of external audit and investor decisions are affected by the dimensions and advantages of this technology; the results showed the importance of using artificial intelligence technology in achieving and enhancing audit quality. A study conducted by Thabit et al. addressed the role of efficient use of blockchain technology in enhancing audit quality. The study reached a set of conclusions, the most important of which was that this technology will be a helpful factor for auditors to increase audit quality through accuracy in decisions, reducing time and cost (Thabit, 2022). Abu Al-Anin's study investigated the impact of the auditor's reliance on robotic process automation technology on his perception of its positive impact on audit quality. The study concluded that the auditor's expectation of audit quality in the event of adopting RPA technology is greater than the average auditor's expectation of audit quality in the event of traditional auditing (Abu Al-Anin, 2024). In another study by Nashwan et al, which has demonstrated the extent to which audit quality is affected and the possibility of enhancing it in the three stages of the audit process, it has been found that the existence of a relationship and a positive impact between the use of modern technological techniques and the external audit process in these stages.

The research recommended the need for auditors to improve their experience and efficiency in these techniques (Nashwan, 2024). Aida and Ben Youssef's study, in turn, focused on artificial intelligence as a modern approach to achieving sustainable development goals, the study concluded that artificial intelligence applications play an important role in processing a big data quickly and accurately, and then detecting problems and errors and anticipating potential risks, which helps improve planning and decision-making for auditors (Aida & Khalaf Allah, 2024)

The reviewed literature supports the hypothesis that employing e-governance techniques contributes to enhancing the accuracy of investment decisions, increasing confidence in financial data, and reducing the effort, cost, and time required to complete tasks incumbent upon the entity employing these techniques.

A study conducted by Kostić et al. focused on identifying the impact of big data analytics and blockchain technology on the future of the external audit profession. The study's most important conclusions were that the use of modern technology to complete audit assignments will play a significant role in developing the profession. The study also concluded that the use of these techniques will have a significant impact on the future of the audit profession (Kostić et al., 2017). Another study by Manita et al. (2020) focused on the digital transformation of external auditing and its impact on corporate governance. The study's most important findings were that digitisation enhances the importance of auditing and the analysis of all client data, which contributes to achieving the efficiency and effectiveness of audit tasks. The study by Dempsey & van Dyk (2024) investigated the role of data analytics technology in enhancing the quality of external auditing. The study revealed strong evidence of significant concerns regarding audit quality and that auditors are using data analytics to address these concerns. It concluded that the use of data analytics in auditing enhances external audit quality. The study by Al-Hemyari (2015) examined the extent to which auditors use electronic auditing in audit firms and the availability of the necessary expertise to perform this task. The study concluded that electronic databases play a significant role in the auditing process, in addition to the ability of auditors to use electronic auditing software. The study's recommendations emphasised the importance of employing the role of programmers alongside auditors in the analysis and design of database software. The above-mentioned literature hypothesises that the use of e-governance techniques enhances the efficiency of the external audit profession through the advantages and characteristics of these techniques, which improve the quality of tasks performed by auditors and thereby develop their capabilities in the field of digital techniques.

Another study, conducted by Nehla & Benhaoues (2022), addressed how to enhance the external audit profession by leveraging electronic auditing as a modern approach to processing digital records in light of the repercussions of the COVID-19 pandemic. The most important results it achieved were that adopting computer-aided electronic auditing techniques (CAATs) contributed to reducing losses resulting from the pandemic compared to manual auditing methods. The study recommended the necessity of adopting these techniques due to their significant positive impact on audit quality. As for Zaqout (2016), the importance of his study was represented in highlighting the enhancement of the quality of external auditing through information technology, by knowing the advantages of using this technology in external auditing, in addition to explaining the consistency between auditing standards and the use of modern techniques in the auditing process. The most important results reached by the study indicated the importance of using information technology in the various stages of auditing. Otete's study investigated the extent of adoption of audit programs by small and medium-sized enterprises. The study's main conclusions identified the benefits and challenges specific to the auditing profession, as well as important proposals for increasing the adoption of audit software by small and medium-sized enterprises (SMEs). The proposals included concluding agreements with the companies that issue them to reduce their costs and then encouraging companies operating in the profession to adopt them (Otete, 2020).

The study of Maji & Kazim (2023) investigated the impact of auditor efficiency on cloud auditing practice. The most important results reached by the study are that the use of cloud technology and big data in auditing work has a positive impact on the capabilities and experiences of auditors. The study recommended the need to move towards electronic applications in the Iraqi environment. (Aida & Khalaf Allah, 2024)'s study, in turn, focused on artificial intelligence as a modern approach to achieving sustainable development goals. The study concluded that artificial intelligence applications play an important role in processing big data quickly and accurately, and then detecting problems and errors and anticipating potential risks, which helps improve planning and decision-making for auditors. The study of Mansi and Al-Taie aimed to investigate the impact of e-government on the performance of organisations. The most important conclusions reached by the study were the presence of a good impact capacity for e-governance applications on the level of performance through the good employment of these applications in completing tasks. The most important recommendations of the study emphasised the need for financial support for the purpose of implementing e-governance techniques with a focus on the training aspect in the field of technology (Mansi & Al-Taie, 2022). A study by Melyani & Saoud (2024) focused on the role of electronic auditing in improving the quality of external auditing. The study concluded that the use of electronic auditing procedures will improve external auditing and enhance its quality. The study recommended the need to develop guidelines and instructions by the accounting bodies that regulate the auditing profession to ensure that auditing tasks are performed with the required quality. The above-mentioned literature leads us to the hypothesis that adopting e-governance techniques in external audit tasks has a significant impact on the quality and flexibility of the tasks carried out, in light of the challenges facing audit entities.

It is worth noting that studies of all (Al-Hemyari, 2015), (Dempsey & van Dyk, 2024), (Otete, 2020) and (Maji & Kazim, 2023) have concluded a hypothesis indicating that the electronic transformation of external audit tasks by audit entities faces a set of technological (technical and technical), human, operational, economic, as well as financial challenges, which is reflected in the weak adoption of electronic auditing techniques by these entities.

After reviewing a set of studies related to the subject of the study, both researchers seek to fill the knowledge gap by proposing the application of modern technological techniques that suit the requirements of Iraqi audit firms within the framework of improving performance and operational efficiency, as well as enhancing audit quality. This is especially true since this topic has not been adequately addressed in studies at the local level. It can also be noted that most of the previous literature addressed e-governance techniques or audit quality in a manner that suits the reality of countries that apply these techniques in the field of external auditing, which has not been adequately addressed in light of the Iraqi context. There is also an urgent need in the country for such a topic, given that it deals with issues of quality, control, and reducing manipulation in financial reports, especially with the significant renaissance that Iraq is currently witnessing in combating corruption.

2.2 Hypothesis Development:

1. The weak application of e-governance techniques in carrying out audit tasks by audit firms in Iraq, coupled with a lack of awareness of how these techniques work, negatively impacts audit quality.
2. The ability of audit firms to employ electronic auditing to carry out their work is negatively impacted by some challenges, which in turn prevent the optimal use of these techniques in the audit process.
3. Implementing an integrated framework for e-governance in external audit firms in Iraq will achieve positive results that will be reflected in the quality of external audit operations.

3. Research tools and Methodology:

3.1 Survey Method:

The research adopted the descriptive analytical approach by reviewing previous studies and literature related to e-governance and audit quality, then analysing them within the framework of explaining the relationship between the research variables. The independent variable is represented by electronic governance techniques (electronic auditing as a model), while the dependent variable is represented by audit quality. The research also relied on a quantitative analytical approach by designing survey questionnaires distributed to 34 auditors within the research sample, which comprised 8 companies out of a total of 30 external audit firms operating in Iraq, represented by 80 auditors. The sample represented approximately 27% of the research population, aiming to test the research hypotheses and ensure that the study population was optimally represented. One of the reasons that prompted the researchers to choose these companies is that they are among the leading companies in the field of external auditing, and as a sample, they are considered, in the researchers' opinion, to be representative of society due to the nature of their work, the size of their activity, the flexibility in the cooperation of their management, and the availability of the possibility of providing data that meets the requirements of the analysis. In addition, one of the companies that was chosen employs electronic auditing in their work using specialised programs in this field. The results of the survey questionnaires were analysed using SPSS to test the research hypotheses, and then the researcher extracted the results. Hypothesis testing and statistical conclusions related to the relationships between the variables were drawn. Surveys are among the effective tools employed in collecting research data. In this context, the researchers designed a survey that can be answered to collect data related to the three topics. The first topic examined the extent to which e-governance techniques were applied in auditing work in a sample of audit firms selected based on their leadership in the profession. The second topic examined the identification of the most significant challenges hindering digital transformation in external auditing tasks, while the third topic highlighted the role of these techniques and their impact on quality.

3.2 An overview of the concepts of E-governance:

The first e-governance initiatives began to emerge in the 1990s, specifically during the period that witnessed the emergence of the Internet, with the global trend towards digital techniques. Concepts such as e-citizenship became entrenched through citizens' expectations that their transactions and services would be conducted electronically via the Internet, whether through governments or commercial organisations (S. Singh, 2011). According to UNESCO, the concept of e-governance encompasses new leadership styles, new methods for discussing and making decisions about policies and investments, new ways of accessing education, new ways of listening to citizens, and new ways of organizing and delivering information and services within the framework of promoting good governance, the most important features of which are transparency and accountability (UNESCO, 2016). Singh discussed this concept as one that targets various sectors within the framework of implementing administrative reforms and achieving sustainability in the administrative process by employing technology to achieve integration across all aspects of society. The e-governance model is designed according to the needs of stakeholders (A. Singh, 2023). As for the study of Mohammed and Abdullah, it emphasized the necessity of employing modern techniques in auditing companies and offices due to their importance in improving performance, efficiency, and quality of auditing, while emphasizing the necessity for auditors to take into account the need to develop the specialized skills necessary to practice auditing work using modern techniques (E. J. Mohammed & Abdullah, 2022).

Based on the above, researchers believe that this concept refers to the use of modern techniques within the framework of optimal use of available resources to enhance the decision-making process by emphasising oversight, transparency, and the manner and extent of government responsiveness, while increasing operational efficiency and contributing to reducing the associated risks.

3.3 Challenges of Implementing E-Governance Techniques:

These challenges can be classified as follows:

1. **Human challenges:** The human factor is a critical element in the success of e-governance mechanisms and techniques. These challenges include the shortage of specialised personnel and the need for information technology skills, as well as the lack of qualifications and training for employees in establishments and audit firms on the application of e-governance techniques (Hawiz, 2022).

2. **Funding challenges:** Funding is a priority factor for the success of e-governance mechanisms and techniques, which require high costs for implementing, maintaining, and updating e-governance techniques, which constitutes an obstacle for companies with limited budgets (Hawiz, 2022).

3. **Political and legal challenges:** It is well known that the success of e-initiatives and techniques depends largely on the existence of a framework. A legal framework appropriate for its implementation and updated to keep pace with the latest developments in this field, as the lack of appropriate legislation consistent with the environment in which it operates poses an additional challenge to implementation (Dhaoui, 2019).

4. **Social Challenges:** Protecting and preserving information is one of the most significant social challenges. This includes protecting information resources and infrastructure from various threats such as fraud, unauthorized access to data, and cyberattacks, as well as cybersecurity issues, the lack of integration of systems used by auditing firms for financial statements with e-governance systems, and the lack of automation by these firms (Dhaoui, 2019).

5. **Challenges of Resistance to Change:** These challenges are represented at the entity level due to a weak digital culture and resistance to change by employees in the transition from traditional methods to e-governance techniques. This resistance is attributed to a lack of awareness and knowledge among employees (AL-Qahwash S. A. D., 2020)

6. **Technological Challenges:** Technological challenges include the lack of appropriate information technology infrastructure, which is essential for making services executable. Weak internet connectivity and power outages also make it difficult to access information. The continuous updates required by these techniques have financial and technical impacts (Ogunrinde et al., 2025)

3.4 The Reality of E-Governance in Iraq:

In Iraq, the first efforts and initiatives to employ the e-governance strategy and enhance its development were in 2004 through the signing of a Memorandum of Understanding (MoU) between Iraq and Italy to provide services electronically. In this context, the United States Agency for International Development (USAID), in cooperation with the Iraqi Ministry of Science and Technology, developed the e-Governance Strategy (2007-2010) to develop basic services and improve governance in society electronically, according to the assessment of the technology landscape in Iraq issued by the United Nations (Pizarro et al., 2023). USAID indicated that the aforementioned strategy begins with identifying obstacles and then addressing them. A specific information technology strategy is then developed, along with building the structures and capabilities of the electronic platform, until the final stage, which witnesses the Integration of services via the electronic portal (Al-Dabbagh, 2011).

As part of the gradual shift towards e-governance, the National Data Center was established in 2021 under the General Secretariat of the Council of Ministers. This center is responsible for providing electronic services as part of a roadmap aiming to achieve national data sovereignty by 2026. 2021 also witnessed the launch of the Republic of Iraq Government Services Portal (UR) project (National Data Center, 2025)

3. 5 The Concept of External Audit Quality:

Regarding the term audit quality, both Mukhtar and Samir referred to the concept of audit quality as the auditor's ability to detect distortions in financial statements and to strive for full disclosure of all deficiencies in those statements at the end of the audit mission. Quoting the International Federation of Accountants, they explained that achieving quality in the audit process from the perspective of professional bodies can be achieved when both auditing standards and performance standards are adhered to (Samir & Mukhtar, 2017). The researchers agree with the concept presented by Mukhtar and Samir due to the comprehensiveness of what it includes and its agreement with the objectives set by the research, as the researchers see that the concept of audit quality is an integrated combination between the work of the auditor and other elements of the auditing process that form the basis of the auditor's report.

Noting that the Board of Accounting and Regulatory Standards of the Republic of Iraq had issued Audit Guide No. (7) on Quality Control, which was approved in 2016 in accordance with the international quality standard, including a reference to the concept of audit quality as a set of policies and procedures adopted by audit firms or offices to provide reasonable assurance that all audits are conducted in accordance with approved auditing principles, Board of Accounting and Regulatory Standards in Iraq, 2016. The International Auditing and Assurance Standards Board (IAASB) defined the term audit quality as including the key elements that create an environment that increases the likelihood of conducting high-quality audits through a work team that adheres to values and ethics and has sufficient knowledge, skill, experience, and time allocated to perform the audit process (International Auditing and Assurance Standards Board (IAASB), 2014). Given the importance of audit quality, the International Auditing and Assurance Standards Board (IAASB) developed a general framework for audit quality to strengthen quality control systems, improve transparency, and adherence to standards and guidelines. Haouam highlighted the most important objectives of the framework, citing the International Auditing and Assurance Standards Board. These objectives include raising awareness of the key elements of audit quality, including inputs, processes, and outputs (Haouam, 2020) The researchers believe that the quality of auditing is affected by the auditor's work environment and auditing procedures, especially since this concept has multiple dimensions represented by the effectiveness and efficiency of these procedures and the extent of the auditor's commitment to professional and ethical standards within the framework of emphasizing transparency and reliability in the financial statements auditing process.

While the study Al-Dawghi indicated through the results it reached that in the era of information technology, the services provided by auditing entities have expanded and contributed to the development of auditing from its traditional form to another, more accurate and advanced form (Al-Duwaj, 2008)

3.6 Audit Quality Indicators:

In this context, a set of indicators was prepared to measure quality by the Certified Professional Accountants in Canada (Canada, 2018). The following is an explanation according to Table (1) for each indicator based on various studies ((Canada, 2018),(Accountancy Europe, 2022), (Independent Regulatory Board for Auditors (IRBA), 2022), (Dewi, 2023) quoted from (Rahmat, Ratna 2020), (Ibrahim & Khudair, 2024), (Aronmwan et al., 2013), (Chartered Financial Analyst, 2025), (Nashwan, 2024), (Accounting and Financial Reporting Council (AFRC), 2024), (Engelbert, 2015) As in Table (1).

Table 1: Quality measurement indicators prepared by researchers

Classification	Indicator	Details
1. Team engagement indicators	Team experience	The engagement team's experience includes the number of years of service, skills in the field of expertise, and knowledge of the client and the work environment.
	Training and Professional Development	It is essential to consider training and development in the professional field, including multiple aspects, such as the type and quality of training, the number of training hours, and the areas of training, as employee training and qualifications positively impact the quality of financial reports.
	Team rotation	The level and extent of employee turnover within the company is an important indicator of the consistency of the work of engagement teams within an audit firm.
	Partner/Manager Participation	(The percentage of audit hours in which the manager or partner participated compared to the entire work team), A high percentage is an indicator of high audit quality or represents greater participation by the manager or senior members of the work team in the audit task.
	The role of the engagement partner	The engagement partner's role in the audit is measured as a percentage, with a higher percentage representing greater engagement by the partner or more significant areas of governance.
	2. Audit implementation indicators	Audit Hours by Risk
Audit Execution Time (Percentage)		This factor refers to the audit hours spent on the audit, such as during the planning phase, at the end of the year, or for interim audits.
Audit Progress Stages		The timeline for the audit phases necessary to complete the audit assignment, according to the work progress schedule, is designed to provide timely and useful reports to stakeholders.
Technology in Audit		The types of technological tools used in the audit assignment, the mechanism for their use, and the number of hours used to enhance audit quality.

	Assigned Engagement	The appropriate recruitment of specialists with the knowledge and skills to complete the audit, based on the number of hours required for the work of experienced personnel and the number of personnel required to complete the assignment.
3. Management indicators	Management Outputs	The timeliness of delivering agreed-upon results from management to the auditor.
	Addressing Control Deficiencies	Management's effectiveness in addressing deficiencies in the client's internal controls.
	Relying on Internal Control	The client's ability to identify and subsequently address problems increases with the time invested in internal audit quality review. This aspect includes the extent to which internal controls are relied upon to complete the audit.
4. Company level indicators	Inspection Results	Knowing the effectiveness of the client's control environment is achieved through the results of a sample of audits. These results contribute to providing insight into quality-related aspects.
	Independence	This factor relates to the frequency of violations of independence requirements, especially since the independence, objectivity, and impartiality of the auditor play an important role in instilling confidence in financial statements among users.
	Reputation	An audit firm's reputation is built on several factors combined, including its brand name, the professionalism and technical expertise of the auditors, and their commitment to professional and ethical standards. Therefore, reputation represents the image the audit firm has worked to shape over time.
	Senior Management Approach	The direction and continued emphasis of the audit firm's senior management on audit quality is consistent with the characteristics related to values, professional ethics, and engagement-level behavioral ethics of the International Auditing and Assurance Standards Board (IAASB) Framework for Audit Quality.
5. Customer service indicators	Contact the Audit Committee	An important requirement for enhancing quality is these interactions, including interaction with the audit committee. This interaction can contribute to identifying factors directly affecting quality, informing the committee of the auditor's responsibilities related to the performance of the audit engagement and the information to be communicated to it, the timing of the audit process and the overall audit strategy.

	Exchange and share insights	The level of commitment to continuous improvement and the effectiveness of the financial reporting environment can be achieved through the exchange of insights and ideas between the external auditor, the audit committee, and management.
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Source: researchers' preparation

3.7 E-Governance Techniques and Their Role in External Audit Quality:

E-Governance techniques have become essential in implementing and complying with international standards and reducing the risks faced by audit firms through the optimal use of these techniques to complete audit tasks. The most important techniques that can be employed as digital systems within the framework of an audit firm's electronic infrastructure are Blockchain and Cloud Computing. Research carried out by Wali et al. indicated that the use of cloud computing will enable beneficiaries to make informed decisions with greater confidence and speed compared to traditional methods (Wali et al., 2022). Other techniques for data analysis and electronic auditing within the framework of oversight and analysis include artificial intelligence (AI), robotic process automation (RPA), and data analytics. Electronic Auditing (E-Auditing) is also one of the most important modern techniques that contributes to enhancing audit quality. Otete explained that the most common electronic auditing programs are CaseWare, Myaudit, PCAS, and DraftWorx™. It is essential for audit firms to adopt electronic auditing programs that improve their effectiveness and efficiency, while allocating an appropriate budget for qualification, training, and internet access (Otete, 2020). Hashemi and Dīaa El-Dīn emphasised that achieving accuracy in completing tasks, reducing time and costs, and reducing risks associated with these tasks positively impact the quality of work performed through the optimal use of information technology in related tasks (Lazali & Dīaa Al-Dīn, 2022). Al-Karaawi and Salman's study indicated that the use of advanced technological systems in accounting operations, such as enterprise resource planning systems (ERP), will make the accounting system work on a single database and automate data (Salman & Yousef, 2019). According to the researchers' opinion, this will contribute to facilitating electronic auditing due to the automation of data and the ease of electronic auditing and documentation. The study by Hammadi and others confirmed the existence of a direct relationship between the application of e-governance techniques and audit quality, as e-governance has a positive role in strengthening audit quality (Hammadi et al., 2019). The study by Abdullah and Jasim also confirmed that employing advanced technology through advanced accounting devices and systems would enhance the characteristics of accounting information, especially concerning appropriate timing, which is of particular importance to the beneficiary parties, especially investors (Abdullah & Jassim, 2017)

In Iraq, as part of its digital position assessment, the United Nations Development Program (UNDP) explained that the use and innovation of modern techniques requires consideration of providing high-level electronic services based on an advanced electronic infrastructure, along with developing a comprehensive understanding of these techniques through investment in development projects and providing project support in the field of technology, which includes capacity building and development, and holding training courses to support skill development in this field (Pizarro et al., 2023). Although UNDP noted the importance of modern techniques through incentives supporting technological development at the local level, it highlighted the lack of current development plans or ideas, with many challenges hindering the optimal use of modern techniques, among the most prominent of these challenges is the inadequacy of basic infrastructure for the development and establishment of e-services, particularly with regard to the internet, instability of electricity supply, and the challenges of financing, technical, administrative, and social challenges.

A study published by Al-Ani & Mohammed, in turn, emphasised the need for beneficiary parties to keep pace with technological developments and to optimally utilise the advantages offered by information technology, along with the importance of reviewing the experiences of advanced countries in this field and benefiting from their successful experiences (S. A. Mohammed & Mohammed, 2012). From this standpoint, the researchers believe that it is possible to introduce current development plans or ideas to the work of Iraqi auditing firms by employing electronic governance techniques represented by electronic auditing for auditing purposes, especially with the rapid development witnessed by the labor market and the resulting repercussions that affect the external auditing profession.

4. Results:

In the context of analysing the survey questionnaire results, the three topics related to the application of electronic techniques, the challenges and obstacles that hinder implementation, and the audit quality. Each topic included ten questions formulated to take into account all aspects of electronic techniques and their impact on audit quality. The following is a review of the results reached by the researchers.

4.1 Descriptive statistics:

Table 2 shows the descriptive analysis, including the results regarding calculating the arithmetic mean (Mean) and the standard deviation (Standard Deviation). The results show that the mean for identifying the level of application of electronic governance techniques in the selected sample of auditing companies recorded (0.4853), as for the standard deviation for this topic, its value recorded (0.33041). While the arithmetic Mean of the second variable - challenges and obstacles to digital transformation in external auditing for the sample under study reached (0.7441), and the standard deviation for this topic, which recorded (0.23380). As for the third variable - the role of e-Governance techniques and their impact on audit quality, the arithmetic mean value recorded (0.9588) and the standard deviation for this topic recorded a value of (0.09572).

Table 2: The descriptive statistics (arithmetic Mean and standard deviation)

Descriptive statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Application of electronic techniques	34	.00	1	0.4853	0.33041
Challenges and obstacles	34	.30	1	0.7441	0.23380
Audit quality	34	.60	1	0.9588	0.09572

Source: researchers' preparation

4.2 Results of the Cronbach's alpha:

In the context of measuring the reliability of the questions included in the survey list and their consistency with each other, as well as strengthening the results, the internal consistency coefficient of the variables has been employed (Cronbach's alpha) for each of the survey list's topic. Table 3 shows the reliability results measured for the topic of applying e-governance techniques in external audit work. The value of the internal consistency coefficient recorded (0.886).

Table 3: The internal consistency coefficient for the topic of applying E-governance techniques

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on standardized items	N of items
0.886	0.883	10

Source: researchers' preparation

Table 4 below shows the value of the internal consistency coefficient for measuring the reliability of the questions related to the obstacles and challenges that hinder the adoption of e-governance techniques in external auditing, with the value recorded as 0.746.

Table 4: The internal consistency coefficient for the obstacles and challenges topic

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on standardized items	N of items
0.746	0.753	10

Source: researchers' preparation

According to the results obtained by the researcher from the data analysis process, the internal consistency coefficient for measuring the reliability of questions related to the role of e-governance techniques and their impact on audit quality was 0.693), as shown in Table 5.

Table 5: The internal consistency coefficient for the impact of E-governance techniques on audit quality

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on standardized items	N of items
0.693	0.692	10

Source: researchers' preparation

4.3 Correlation Analysis:

One of the statistical methods employed in the research is correlation analysis between the three topics to determine the relationship between two or more research variables and whether these relationships are statistically significant. Pearson's correlation coefficient (r) was used. A positive value for this coefficient indicates a positive relationship between the topics, while a negative value indicates a negative relationship between them. A zero value indicates no correlation between the topics. Table 6 shows the correlations between the three topics.

Table 6: The Pearson correlation coefficient for the topics and their statistical significance.

Correlations				
		Application of electronic techniques	Challenges and obstacles	Audit quality
Application of electronic techniques	Pearson correlation	1	.342*	.124
	Sig. (2 - tailed)		.048	.485
Challenges and obstacles	Pearson correlation	.342*	1	.490**
	Sig. (2 - tailed)	.048		.003
	N	34	34	34
Audit quality	Pearson correlation	.124	.490**	1
	Sig. (2 - tailed)	.485	.003	
* Correlation is significant at the 0.05 level (2 - tailed)				
** Correlation is significant at the 0.01 level (2 - tailed)				

Source: researchers' preparation

4.4 Regression analysis:

The researchers conducted regression analysis, an important statistical method for analyzing the results they reached and determining whether the model used was appropriate for analytical purposes. This was achieved by employing an ANOVA analysis model for this purpose. table (7) shows the values of the ANOVA model, which shows the relationship between the three variables.

Table 7: The ANOVA of the model

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig
Regression	.073	2	.037	4.952	0.014 ^b
Residual	.229	31	.007		
Total	.302	33			
a. Dependent Variable: Audit quality					
b. Predictors: (constant), Application of electronic techniques, Challenges and obstacles					

Source: researchers' preparation

5. Discussion of Results:

5.1 Discussion of results of descriptive statistics:

First variable: Application of e-governance techniques in external audit work

The results show that the arithmetic mean for identifying the level of application of electronic governance techniques in the selected sample of auditing companies recorded (0.4853), which indicates a clear decline in the application of these techniques, as it did not exceed 50%, although one of the companies targeted by the survey form, specifically (Mustafa Fouad et al) company, fully applies electronic auditing, which would raise that percentage. Despite that, the percentage indicates a noticeable decline in application in the majority of these companies, as the researchers observed and indicated that the majority of companies included in the survey employ the Microsoft -Excel program in auditing work, which specializes in implementing simple calculations and cannot be employed comprehensively for electronic auditing, documentation, and electronic automation work, given that the characteristics of that program do not support that approach. As for the standard deviation for this topic, its value is recorded as 0.33041, which indicates a difference in the opinions of auditors in adopting these techniques to complete the audit work in their companies. This reflects the reality of the work environment in Iraq, which lacks advanced techniques in electronic auditing, this observation, as noted by researchers, indicates that electronic auditing is either limited to large companies, not applied at all in most firms, or relies on basic techniques that fail to comprehensively cover the audit process. Thus, it cannot implement the audit task in the optimal way. Accordingly, the analysis of the results is completely consistent with the first research hypothesis, which in turn indicates the weak application of electronic governance techniques in audit tasks by external audit companies operating in Iraq, with a lack of awareness of the mechanisms of these techniques, which negatively affects audit tasks.

The Second Variable - Obstacles and Challenges to Digital Transformation in External Auditing:

Table (2) shows that the arithmetic Mean for the challenges facing auditors in external audit firms for the sample under study recorded (0.7441), indicating that the majority of their opinions agreed on identifying a set of technical, financial, human, and organizational challenges, along with the accompanying obstacles related to the infrastructure in audit firms and the weakness of individual qualification and training programs. These challenges hinder auditors' transition to electronic auditing. Therefore, if we consider the standard deviation for this topic, which reached (0.23380), a somewhat low indicator, the researcher concludes that auditors have a degree of awareness and knowledge, as well as an understanding of the level of these challenges that hinder the process of a complete electronic transformation towards e-governance techniques. This is consistent with the second research hypothesis, which states that the adoption of electronic auditing by audit firms in carrying out their work is negatively affected by a set of challenges, which in turn prevent its optimal use.

The Third Variable - The Role of E-Governance Techniques and Their Impact on Audit Quality:

Table (2) shows that the arithmetic mean value for the role of e-governance techniques in general, and e-auditing in particular, and their impact on audit quality reached (0.9588), a very high percentage that reflects the opinions of auditors in this regard, based on their perceptions and future expectations regarding the extent to which audit quality will be positively affected by the future application of these techniques. This percentage does not reflect their views and opinions on the current state of quality in their companies, given that the researcher is investigating the extent to which quality is affected by the application of these techniques, which has been observed to be absent or limited to only a few companies within the research sample. It is also worth noting that the auditors' opinions regarding quality when answering questions related to this topic were coupled with a practical demonstration conducted by the researcher of the electronic auditing program (CaseWare Working Paper). Consequently, part of their perceptions was based on the presentation of the practical application. The standard deviation for this topic reached a very low level, with a value of (0.09572), which confirms the fundamental agreement of auditors' opinions that the use of e-auditing will significantly enhance audit quality. Accordingly, we note that the analysis of the results for this topic is consistent with the third research hypothesis, which indicates that implementing an integrated framework for electronic governance in external audit firms in Iraq will achieve positive results that will be reflected in the quality of external audit operations.

Table 3 shows the reliability results measured for the topic of applying e-governance techniques in external audit work. The value of the internal consistency coefficient reached 0.886, a very high value that reflects the degree of consistency of the questions included in the application topic. The auditors' answers to these questions were consistent and without distraction, reflecting the clarity and objectivity of their opinions regarding the extent of the application of e-governance techniques, specifically electronic audit programs, in the audit firms they represent. Therefore, it is of utmost importance to employ the items of this topic for subsequent statistical operations for analysis purposes and to obtain accurate results that accurately reflect the phenomenon under study, given the consistency and compatibility of these items.

The Second Variable: Obstacles and Challenges to Digital Transformation in External Auditing:

Table 4 shows the value of the internal consistency coefficient for measuring the reliability of the questions related to the obstacles and challenges that hinder the adoption of e-governance techniques in external auditing, with the value of 0.746). which is considered good and reflects an appropriate level of consistency for the items included in this topic. There is good consensus among auditors regarding their answers to the topics' questions, taking into account some variation attributed to the different levels of challenges hindering digital transformation in their companies. It has been found that some companies have a high level of infrastructure and qualified individuals with a sufficient degree of training, skill, and ability to complete tasks electronically, while other companies do not have this level.

As a result, the internal consistency coefficient for this topic decreased compared to its value in the first topic related to implementation.

The Third Variable - The Role of E-Governance Techniques and Their Impact on Audit Quality

According to the results obtained by the researchers from the data analysis process, the internal consistency coefficient for measuring the reliability of questions related to the role of e-governance techniques and their impact on audit quality was recorded at 0.693. As shown in Table 5, the auditors' answers to a portion of the questions related to this topic were completely consistent, which resulted in the presence of zero deviation for these items due to complete repetition. Accordingly, identical answers were automatically excluded by SPSS, given that the alpha coefficient measures the variance between auditors' responses. Since a portion of the responses were completely similar, it indicates the auditors' awareness and understanding of the answers to these items.

5.2 Discussion of results of correlation analysis:

Table (6) shows the correlations between the three topics; it has been statistically found significant positive correlation between the first and second topics at a confidence level of 95%. This realistically reflects that the extent of the application and use of e-governance techniques in auditing, specifically for e-auditing purposes, is significantly affected by the challenges in the auditor's work environment, which in turn prevents a complete transition to e-auditing. Therefore, the relationship between the two topics is an inverse relationship, and the level of application of e-governance techniques will increase once the challenges that hinder e-auditing are addressed.

The results of the statistical analysis reached by the auditor also showed the existence of a positive correlation with a very high statistical significance between the challenges topic and the quality topic, with a confidence level of (99%), meaning there is a probability of no more than (1%), indicating that this relationship could be a coincidence. Accordingly, the researchers concluded that achieving quality at the required level in completing audit tasks electronically is linked to a very high degree to eliminating the challenges facing the application mechanism of these techniques, as whenever audit firms suffer from challenges and obstacles related to their work environment, whether internally or externally, about electronic application, this is negatively reflected on the quality of audit tasks. Accordingly, achieving quality is directly linked to eliminating these challenges. Regarding the relationship between the first and third topics, the analysis results showed an indirect positive relationship between the two topics.

The researchers attributes the reasons for this to the fact that the majority of auditors responding to the survey lists did not actually apply e-governance techniques or e-auditing programs, and that their response to the items related to the quality topic was in accordance with their perceptions and future belief about what the quality of auditing would be based on their theoretical understanding and evaluations, which were coupled with a practical presentation conducted by the researchers for the CaseWare Working Paper program. This response was not in accordance with the current quality reality in the companies in which they work, because the process of applying e-governance and e-auditing techniques in audit work is still in its initial stages, and therefore, its impact on the quality of audit tasks is still very limited. On the other hand, the researchers reached an important conclusion, which is that achieving quality is not only linked to the process of its application in audit firms, but also to getting rid of all the challenges that constitute an obstacle to achieving the required quality in audit firms. Accordingly, the effect of the first topic related to the application of techniques on the third topic related to audit quality was indirect and linked to the second topic related to the extent of getting rid of challenges.

5.3 Discussion of results of regression analysis:

In the context of discussing the results when developing the model, the third topic (audit quality) was taken into account by changes occurring in the first and second topics related to (the application of techniques and the challenges hindering their implementation). In other words, it is crucial to consider the mechanism for applying e-governance techniques in external audit work and addressing the challenges hindering their implementation in audit firms collectively when interpreting any changes in audit quality, not individually. Even if the first topic has an indirect impact on audit quality, it will have a significant impact when combined with addressing the challenges affecting the implementation of these techniques. This will then enable it to provide an important interpretation of audit quality, as confirmed by the results shown in Table 7, which states that the model for this analysis has a significance level of (0.014), which falls within the appropriate range, i.e., less than (0.05). Therefore, the model as a whole is a statistically significant model. It should also be taken into consideration that there is another group of factors that have an impact on quality, such as independence, organisational aspects, internal control, and individual qualification. These factors also explain important aspects of audit quality. However, within the framework of this study, the researchers focused on the items of the first and second topics when conducting the framework to explain the impact of each of them on audit quality.

5.4 Research Summary of the analysis of the survey results:

The above demonstrates the validity of the three research hypotheses through the study tool, the survey questionnaires. This was clearly demonstrated through the analysis of the results and their clear consistency with each of the three hypotheses. This helped identify the presence of a clear awareness and understanding among auditors regarding the role of e-governance techniques in general, and e-auditing in particular, and their impact on audit quality. Their responses were consistent with the hypotheses, which were distributed across the topic of implementing e-governance techniques, the challenges that hinder implementation, and audit quality. This paved the way for the researchers to propose the possibility of employing a framework that relies on e-auditing using the CaseWare Working Paper program, consistent with international auditing standards and taking into account the requirements of the Iraqi environment.

6. Conclusion:

The study reached a set of conclusions, which are that the adoption of the transition to electronic auditing by audit firms will be consistent with the requirements of the auditing profession, especially given the features provided by electronic auditing related to the documentation process of the task, linking evidence to audit procedures, and customising the program to suit the Iraqi environment. These programs also allow for the generation of reports in PDF format and the ability to share them easily, which has enhanced communication with clients. Therefore, these programs are advanced tools when compared to traditional methods, characterised by simplicity, such as Excel, which is used to complete audit tasks in many audit firms. A variety of technical, human, and organisational challenges prevent the transition to using e-governance techniques in auditing, which negatively impacts audit quality.

The study also found that the ability of e-auditing programs to create an additional copy of the main work file that the auditor is working on through the synchronisation feature they provide allows for maintaining the continuity of data flow, reducing the risk of data loss, and enabling access to the file if the file being worked on by another team member is damaged. It also helps strengthen control over access to information and ensure the electronic security of files and documents.

It was also concluded that the electronic audit programs support audit procedures through official documents that can be attached electronically to each audit procedure. These programs also help enhance the comparability between years for each account, enabling it to observe significant changes in account balances for the comparative years and analyse the reasons for these changes and whether they are considered normal or are attributable to significant distortions.

7. Recommendations:

Based on the findings, the following recommendations can be made:

- The need for Iraqi audit firms to adopt e-governance techniques, specifically e-auditing programs, and to enhance the archiving work of audit firms through the use of e-archiving.
- Incorporating the concept of e-governance techniques in general, and e-auditing in particular, into the curricula of Iraqi universities and institutes, given their important role in developing the profession.
- Before Iraqi audit firms begin adopting e-governance techniques, they must develop a comprehensive strategy that identifies the challenges facing their implementation. The first step in adopting e-auditing begins with addressing any challenges that hinder digital transformation.
- The need for entities supporting the profession, such as " Council of Profession Monitoring and Auditing of Accounting in Iraq", to regulate the work of audit firms and direct them to gradually transition to e-auditing in their work, while encouraging the efforts of researchers involved in adopting e-governance techniques and demonstrating their impact on quality.
- Work to develop legislation and laws related to e-governance techniques to ensure the protection of auditors. It is essential to establish a communication mechanism through an electronic platform that is used for this purpose between government agencies such as the General Tax Authority and the Companies Registrar on the one hand, and the Professional Council and auditing companies on the other hand. This is within the framework of facilitating the exchange of official files and documents related to the audit mission.

Conflicts of Interest: None

Authors Declaration:

We Hereby Confirm That All the Figures and Tables in The Manuscript Are Mine and Ours. Besides, The Figures and Images, which are Not Mine, Have Been Permitted Republication and Attached to The Manuscript.

- Ethical Clearance: The Research Was Approved by The Local Ethical Committee in The University of Baghdad.

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