The Future of the Auditing Profession in the Era of Digital Transformation Technologies - Blockchain Technology as a Model-

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Abstract:

This study emphasizes the significance of blockchain technology as one of the leading modern digital technologies that contribute to the development and enhancement of the auditing profession. To thoroughly address the topic, a descriptive-analytical method was employed to answer the main research question with the utmost precision. This approach was used to obtain scientific results and analyze them objectively. The findings reveal that blockchain is highly effective in reducing time and costs while improving efficiency and accuracy. Furthermore, the technology enhances transparency and credibility through immutable records and offers innovative solutions that accelerate auditing processes, securely and systematically store data, and facilitate efficient analysis.

Keywords: Digital transformation; Auditing profession; Technology; Financial information reliability; Blockchain.

Jel Classification Codes : M41, O31.

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1. Introduction:

In the era of modern technology, digital transformation has become an essential and unavoidable necessity for the auditing profession within companies. This transformation opens up vast opportunities for improving efficiency, developing services, and enhancing communication, thereby ensuring the continuity and competitiveness of businesses in global markets. However, digital transformation has introduced a new reality that necessitates a reassessment of traditional methodologies and the adoption of modern technologies to keep pace with rapid changes. The critical role of the auditing profession in ensuring integrity, transparency, and compliance in financial operations has become more complex with the emergence of advanced technologies such as artificial intelligence, digital data, electronic software, big data analysis, and blockchain technology. While these technologies offer significant benefits in terms of enhanced efficiency, accuracy, and faster processes, they also present substantial challenges that companies and professionals must address effectively and innovatively. This context shapes the core research problem as follows:

How can the auditing profession adapt to the changes brought about by blockchain technology to enhance process quality and ensure financial transparency?

1.1. Main Hypothesis:

The auditing profession can adapt to the changes imposed by blockchain technology by redesigning auditing strategies and adopting new mechanisms and practices that integrate traditional technologies.

1.2. Sub-questions :

- Does adoption blockchain technology lead to a reduction in the cost of the auditing profession ?
- What challenges might the auditing profession face due to the adoption of blockchain technology ?
- How do the Big Four firms contribute to promoting the use of blockchain technology in auditing tasks ?

1.3. Significance of the Study :

The significance of this study lies in its focus on contemporary issues that have attracted considerable attention from researchers in various fields. As digital transformation has become an urgent necessity especially following the major changes brought about by the COVID-19 pandemic, which has affected numerous institutional activities, including auditing the importance of the auditing profession has notably increased. In this context, blockchain technology plays a crucial role by providing innovative solutions that enhance operational transparency, reduce errors, and improve auditing efficiency. This positions blockchain as a key tool for redefining traditional work methods and opening new opportunities for the development of the profession.

1.4. Objectives of the Study :

The study aims to achieve the following objectives :

- Highlight the importance of adopting digital transformation and its role in creating organizational value.
- Understand blockchain technology, its mechanism of operation, and the impact of its application on auditing practices.
- Explain how blockchain technology can enhance the auditor's work.
- Identify the key advantages and criticisms associated with the use of blockchain technology in auditing tasks.

1.5. Study Methodology :

To thoroughly address the topic, a descriptive-analytical method was employed to answer the main research question with the utmost precision. This approach was used to obtain scientific results and analyze them objectively. Furthermore, the theoretical aspect was strengthened by examining the practical application of blockchain technology by major auditing firms, often referred to as the Big Four, within the auditing field.

1.6. Study Divisions:

To address the study's research question and cover all aspects of the topic, the paper has been divided into three main sections. The first section explores the fundamentals of digital transformation and the auditing profession. The second section focuses on the concept of blockchain technology, while the third section highlights the adoption of blockchain by major auditing firms.

2. Generalities About Digital Transformation and the Auditing Profession

2.1. Concepts of Digital Transformation

2.1.1. Definition of Digital Transformation

There are numerous definitions related to digital transformation, including the following:

Digital transformation is defined as " the changes implemented by a company or government through the integration of digital technologies in all areas of business, which fundamentally leads to a radical shift in business models by transforming the way they operate through innovating a new product, service, or business practice" (Merah & Touileb, 2022, p. 27).

It is also defined as: "The process of transitioning companies to business models that rely on digital technologies to support the development and innovation of their products and services while providing new marketing channels and job opportunities that enhance the value of their goods or services" (Othman Cherif Ishek, 2022, p. 407).

Some consider digital transformation to be "the utilization of new digital technologies to achieve superior performance and sustain a competitive advantage by transforming various dimensions of business. This includes the business model and customer experience, encompassing digitally enabled products, services, and processes,

including decision-making. It simultaneously impacts individuals, encompassing skills, talents, organizational culture, and networks, including the entire organizational structure" (Ahmed Khmis, 2021, pp. 1005-1006).

Based on the previous definitions, digital transformation can be concluded as the process of enhancing systems by utilizing communication and information technologies along with modern digital technologies to improve efficiency and effectiveness in various administrative operations.

2.1.2. Elements of Digital Transformation

Digital transformation encompasses several key elements, including (Boubata, 2024, pp. 185-186):

- **Data**: Serving as the driving force behind the Fourth Industrial Revolution, data is one of the most critical factors in digital transformation. It forms the foundation of the knowledge economy by enabling intelligent decision-making through data analysis.
- **Leadership**: Digital leaders act as a compass, guiding the digital transformation process by formulating strategies, managing digital assets, and harmonizing the system's components effectively.
- **Human Resources**: The most vital component in the transformation process is human resources. It involves training and developing individuals to accomplish tasks, achieve objectives, and create value.
- **Technology**: This includes the appropriate hardware and software, the wisdom to manage them, expertise for optimal utilization, creativity to enhance their effectiveness, efficiency to maintain quality, and skills to boost productivity, all to accelerate the digital transformation process and keep it on track.
- **Infrastructure**: A strong, reliable, and scalable infrastructure serves as the cornerstone and principal enabler of digital transformation.
- **Standards and Regulations**: These are the measures implemented to manage processes and guide the digital transformation. They play a crucial role in performance management, improvement, and enhancing service quality.
- **Safety and Security**: Effective safety and security measures are essential for protecting data and digital systems from external threats, ensuring information security, and safeguarding customer privacy.

2.1.3. Characteristics of Digital Transformation

Digital transformation is characterized by the following (Rashwan, 2020, p. 08):

- Reshaping the way people live, work, think, interact, and communicate by utilizing available technologies, alongside continuous planning and efforts to redefine operational experiences.
- Enhancing efficiency and reducing expenditures, while enabling the implementation of new services with speed and flexibility.
- Achieving a fundamental transformation in services offered to individuals in areas such as health, education, safety, and security, improving their experiences and productivity.

- Changing business models and mindsets to adapt to modern demands.
- Leveraging modern technologies to become more perceptive and flexible, with enhanced capabilities for forecasting and future planning.
- Accelerating innovation to achieve desired outcomes and drive success.
- Providing a strategic approach to creating higher competitive value, developing advanced teams, and sustaining a culture of creativity.
- Replacing traditional processes with digital ones allows more time for innovation and development.
- Improve workflow efficiency and reduce errors by adapting to new ways of working.
- Speeding up daily operations and enabling rapid and flexible implementation of new services.
- Elevating quality and performance standards, increasing productivity, refining products, enhancing beneficiary satisfaction, and optimizing investment returns.

2.2. Goals and Importance of Digital Transformation in Auditing

The goals of digital transformation in auditing will be addressed first, followed by an exploration of its significance.

2.2.1. Goals of Digital Transformation in Auditing

Auditing in the context of electronic data processing aims to achieve the following objectives (Ben Ktib & Kacmi, 2016, p. 206):

- **Economy**: The auditor's goal is to examine the use of computers to ensure they are utilized to their fullest potential in serving the company, with minimal costs, while providing the required information and data promptly, thereby benefiting the organization.
- **Effectiveness** : The auditor aims to evaluate the efficiency of control tools to ensure the competence of the internal control system across all administrative, financial, and operational activities ;
- **Efficiency**: The auditor needs to verify that computers are being used to address the most critical requirements for the company, according to the concept of materiality.
- **Protection** : The auditor ensures that the system is safeguarded against various risks associated with its usage, such as system failure, loss of stored accounting data, issues with viruses, data theft, or intentional sabotage that might be carried out to conceal violations by some employees.

2.2.2. The Importance of Digital Transformation in Enhancing Audit Quality

The importance of digital transformation is reflected in enhancement of audit quality in the following aspects (Bouzidi & Ouadi, 2020, p.243):

- The use of information technology contributes to the application of quality control procedures by increasing confidence in the auditing profession within the information technology environment.

- Improving the documentation process of working papers by adopting specific documentation policies and utilizing information technology in office operations.
- Providing reasonable assurances that the services provided by the office comply with professional requirements.
- Enhancing relationships with clients by demonstrating greater precision and attention during work and leveraging information technology for client communication.
- Creating a fertile ground for attracting new clients and increasing market share amid competitive conditions, advertising restrictions, and advancements in information technology.
- Reducing operational costs associated with auditing processes, enhancing the efficiency and effectiveness of task performance, and minimizing time and effort spent on auditing activities.
- The electronic data interchange system offers numerous advantages to financial institutions, including minimizing the risks of electronic disclosure.
- Utilizing computer systems contributes to the development of financial institutions' accounting information systems.

3. The Essence of Blockchain Technology

3.1. Definition of Blockchain

There are multiple definitions related to blockchain technology, including the following :

Blockchain technology is defined as: "An informational network consisting of a group of devices and nodes, where each device represents a database and ledger that records all transactions occurring within the network. Every transaction is conducted between two devices and is subject to verification and validation by the remaining devices in the network" (Benmoussa & Taibi, 2024, p. 745).

It is also defined as: "A distributed database capable of managing a continuously growing list of records called blocks, each containing a timestamp and a link to the previous block. This chain ensures data availability for all users while maintaining security, as the blocks cannot be modified. Every time information is accessed and updated, the change is recorded and locked through encryption, making it immutable. In subsequent instances, when someone wishes to make changes, the information is stored in a new block linked to the previous one" (Zoubari, 2024, p. 6).

Some define blockchain technology as: "A distributed digital ledger that decentralizes the sharing of immutable data, allowing for the secure storage and transfer of information without the need for a supervisory authority. It consolidates all information into a shared and unique ledger, with the data within it characterized by its immutability. This technology significantly reduces the volume of manual operations" (Belaoura, 2024, p. 50).

From the previous definitions, we can conclude that blockchain is a modern technology based on a distributed network for recording and securing transactions using encryption. It is characterized by offering transparency and security, operating in a decentralized system that allows the verification of transactions without the need for a central authority. Additionally, it facilitates tracking operations while ensuring data integrity and reducing costs.

3.2. Characteristics and Types of Blockchain Technology

3.2.1. Characteristics of Blockchain Technology

Blockchain technology is distinguished by several characteristics, which are as follows (Yacoub Mahmoud al-Ali, 2023, p. 171)

- **Publishing** : All participants can access a copy of the ledger with consistent and identical versions, with no single party having authority or control over the ledger. New transactions are promptly published and distributed across participants' copies.
- **Continuity** : Each user possesses a copy of the ledger, with trust established through acceptance and consensus. Previous transactions cannot be modified without approval by the majority, meaning blockchain records are permanent. The complete ledger is stored by every participant, and its contents can be verified and examined.
- **Programming** : It allows the storage of program codes on the ledger, and automatic posting to the ledger occurs through automated journal entries recorded during operations. This process is referred to as smart contracts**.**

3.2.2. Types of Blockchain

The fundamental design of blockchain is to be publicly accessible. However, in response to companies' needs for data privacy, various types of blockchains have been developed. Below is a summary table of some of the most well-known types of blockchains.

Table N°1: Types of Blockchain

Type	Description
Public Blockchain	A fully decentralized network where the information is publicly available for everyone to access. Any user can join the network at any time and store, send, and receive data from anywhere. This feature makes public blockchain networks "permissionless," meaning participants are not bound by any permits or prior approval to join the network or participate in the verification process. Anyone can create an account, send transactions, and interact with the network. Decentralized consensus mechanisms like Proof of Work (PoW) and Proof of Stake (PoS) are used for decision-making. Public blockchains provide autonomy and a higher level of security since all transaction information is available across all network nodes, making it nearly impossible to hack a specific node. Examples include Bitcoin and Litecoin.

Private Blockchain	Used within an organization where participants need approval to join the network. Private blockchains are more centralized, and transactions within them are private. Companies aiming to collaborate and share data benefit from private blockchains as they offer greater efficiency and faster transactions. No information or transactions are shared with anyone outside the network, meaning it is limited to a specific group within the company.
Consortium Blockchain	A hybrid type of blockchain that combines public and private features. Network participants are limited and known. It is managed by a group of companies or representatives who come together to make decisions for the benefit of the entire network. Only a few predefined parties can verify transactions and participate in the consensus process, instead of allowing anyone in the network. Consortium blockchains are used to exchange information and conduct secure transactions among companies involved in the network.

Source :(Merrah Nourlhouda, The Impact of Information and Communication Technology on the Future of the Accounting Profession in Algeria, Doctoral Thesis, Faculty of Economic Sciences, Commercial Sciences and Management Sciences, University of Algiers3, 2024, p. 59)

3.3. How Blockchain Technology Works and Its Components

Blockchain technology functions as an immediate and direct accounting system that securely stores all information related to financial transactions or contracts and discloses it to the parties involved in the blockchain. The technology consists of several blocks, beginning with the creation block, which serves as the first block in the chain. These blocks are connected through links known as "nodes," and each block contains multiple transactions. Every transaction includes a sender, a recipient, and transaction details, secured using an encryption code specific to the transaction parties within the blockchain. This encryption is the foundation of trust in blockchain, making it a distinctive feature of the technology. Blockchain relies on mathematical algorithms and encryption codes to ensure the preservation, accuracy, and immutability of the recorded information. Blockchain technology comprises four main elements (Yacoub Mahmoud al-ali, 2023, pp. 170-171):

- **Block**: The building unit of blockchain, consisting of tasks to be implemented within the chain, such as recording data or transferring funds. Each block has a fixed data capacity, and once this capacity is reached, a new block is created and connected to the previous one. The primary purpose of blocks is to prevent fraudulent transactions that could disrupt or freeze the chain.
- **Information**: The sub-process or individual task executed within a block, forming part of the block along with other operations and data.
- **Digital Signature**: A code generated by an algorithm in the blockchain system, known as the Hash Function. It performs four key roles:
    - Differentiating one chain from others.
    - Identifying each block within the same chain.

- Distinguishing individual data within a single block.
- Connecting blocks within a single chain.

- **Timestamp**: The specific time at which any operation is executed within the chain.

3.3. Advantages and Challenges of Blockchain Technology

3.3.1. Advantages of Blockchain Technology:

Blockchain technology is considered an innovative technology, based on the many advantages it offers to users. Here are some of these advantages (Simanta , 2018, p. 27):

- The decentralization feature allows sharing of the database without a central authority or entity, making it nearly impossible to modify the data compared to traditional databases.
- Blockchain has no single point of failure due to its decentralized network, enabling it to withstand security attacks.
- Users have the right to control their information and transactions, and Blockchain provides complete, consistent, and up-to-date data without inaccuracies.
- Blockchain ensures transparency and immutability of transactions, as all transactions cannot be altered or deleted.
- It protects sensitive business data using end-to-end encryption.
- The technology allows for tracking the history of any transaction, as all transactions are digitally timestamped on the Blockchain.
- Blockchain exhibits resilience against cyberattacks due to its peer-to-peer nature, and the network continues to operate even if some nodes are offline or under attack.
- Multiple copies of data can be stored on the Blockchain, allowing users to avoid storing sensitive data in a single location.

3.3.2. Challenges of Using Blockchain

While blockchain has advantages, this technology also faces certain disadvantages or challenges, such as (Merrah, 2024, p. 60):

- Blockchain technology is slower than many traditional databases due to the execution of additional processes. This includes signature verification, consensus mechanisms, and redundancy, which require extra time and resources.
- Blockchain requires higher costs compared to traditional databases. Additionally, companies must ensure proper planning and execution to integrate blockchain into their operations.

- Data in blockchain technology cannot be easily modified once recorded. Changing the data requires rewriting the code for all blocks, which is time-consuming and expensive. This feature can make it difficult to correct errors or make necessary modifications.

3.4. The Use of Blockchain Technology in the Auditing Profession

3.4.1. The Impact of Blockchain Technology on Audit Process Stages

The adoption of Blockchain technology by companies or accounting firms would have various and clear impacts on the four stages of the auditing process, as follows:

- **Stage of Accepting the Engagement:** This stage involves numerous judgments characterized by difficulties due to changes in the business environment and the auditor's familiarity with the nature of the client's activities. Accepting an auditing engagement requires meeting a set of prerequisites and considerations, along with evaluating risks such as audit risks, client business risks, and auditor business risks. Traditionally, this stage ends with the auditor sending an acceptance letter (Yacoub mahmoud al- ali, 2023, p. 176). However, with Blockchain, the auditing process could fundamentally change. Since Blockchain stores a complete transaction record, auditors would no longer need to request or wait for business parties to provide data and documents. Furthermore, Blockchain could bypass traditional sampling, enabling continuous auditing for "on-chain" transactions at any specified period. Adopting Blockchain can free resources previously spent on evidence collection and verification, enhancing the efficiency and effectiveness of auditing practices. Additionally, businesses benefit from having all related parties on the Blockchain, creating a secure environment for transactions (Haddi madjid el hadj & Abdel wahed zanoun, 2023, p. 359).
- **Planning Stage of the Audit:** This critical stage ensures the auditor's success in the assigned task by gaining a deep understanding of the subject being audited, assessing audit risks, and preparing a robust audit plan. Traditionally, this phase requires significant time to retrieve necessary information about the company under audit (Yacoub mahmoud al- ali, 2023, p. 176). In a Blockchain-oriented world, auditors can access real-time information, reducing delays between transaction dates and verification. This reduces the time and costs associated with planning and control while allowing auditors to focus on more complex transactions, thereby improving the efficiency and effectiveness of audits. Blockchain could also grant auditors real-time data access through read-only nodes, offering information in a consistent and repeatable format (Haddi madjid el hadj & Abdel wahed zanoun, 2023, p. 359).
- **Audit Implementation Stage:** This stage reflects the preparation done during the planning phase, where the auditor gathers and evaluates evidence, forming the core of the entire auditing process. A major limitation of traditional auditing is reliance on sampling to maintain cost-effectiveness, often leading to unrepresentative conclusions (Yacoub mahmoud al- ali, 2023, p. 177). Blockchain overcomes this constraint by enabling

auditors to test entire populations of transactions and account balances for the audited period. This expanded audit coverage significantly enhances the level of assurance auditors can provide, positively impacting perceptions of the profession (Haddi madjid el hadj & Abdel wahed zanoun, 2023, p. 361).

- **Reporting Stage of the Audit Results:** The audit report represents the output of the accounting system and is the final product of the audit process, serving as the auditor's neutral professional opinion (Yacoub Mahmoud al-Ali, 2023, p. 177). Blockchain would also change how audit reports are presented. Stakeholders increasingly demand real-time reports reflecting the credibility of recorded transactions and information. With Blockchain, auditors could offer opinions through continuous certification stamps accompanied by timestamps visible on-chain for all members (Haddi Madjid El Hadj & Abdel Wahed Zanoun, 2023, p. 363).

3.4.2. Opportunities and Challenges Facing Auditors in Using Blockchain Technology

Blockchain technology presents many opportunities for external auditors, allowing them to perform their tasks more efficiently. Below is a summary of these opportunities:

3.4.2.1. Opportunities for External Auditors with Blockchain Technology

Blockchain technology provides several opportunities for external auditors to perform their tasks more effectively. These opportunities include (Fouad Abdel Rahman Ali, 2022, pp. 125-126):

- **Immutable Stored Data:** The advantage of immutability in stored data and transactions on the network, combined with encryption technology, ensures transactions and removes the trust barrier in agency relationships that require monitoring agents to reduce fraud. The concept of agency is foundational to corporate governance, where the management delegates members of the board of directors, appointed by shareholders, to define objectives and strategies and undertake necessary actions. Blockchain enhances the efficiency of agency relationships and builds trust in the contractual relationship between the manager and the agent, as transactions on the blockchain cannot be reversed.
- **Transparency in On-Chain Transactions:** Blockchain ensures transparency in financial disclosures that comply with generally accepted accounting principles, legislation, and presentation requirements in financial statements. This transparency aids users in making informed decisions. Blockchain makes information more transparent, instantly available, and timely, providing equal opportunities for accessing information. It also facilitates effective user participation in voting or asking questions, unlike traditional IT applications.
- **Verification of Reported Transactions:** Blockchain introduces the concept of distributed and agreed-upon accounting records. Once a transaction (block) is approved by participants (nodes) in the chain, it is recorded and cryptographically timestamped, ensuring its immutability. Every record is stored in multiple locations, with each participant holding a copy of the ledger. Blockchain also enables continuous auditing by combining immutability, consensus, decentralization, and encryption. This addresses a significant shortfall in preparing

reports and financial statements namely, the inability to provide secure and continuous information. Additionally, the technology allows verification, as complete copies of the digital ledger are retained by all active nodes. Even if one node is offline, the ledger remains accessible to others. Every block on the chain links to the previous one, preventing deletion, addition, or reversal of transactions after they are recorded.

- **Auditing All Transactions Without Sampling:** With blockchain, auditors no longer need to rely on sampling due to the effective and immediate availability of all information on the chain with equal access. This technology allows auditors to perform detailed reviews of all transactions conducted by an entity instead of relying on samples.
- **Enabling Continuous Online Auditing:** Blockchain provides continuous access to information for all participants, enhancing the reliability and trust in the data. It reduces costs such as control expenses and minimizes human errors since the system operates entirely without human intervention. Furthermore, blockchain improves access to information because each node contains a complete copy of relevant transactions, avoiding manipulation or fraud through trusted records.

3.4.2.2. Challenges Facing Auditors in the Use of Blockchain Technology

Auditors face numerous challenges as a result of implementing Blockchain technology, summarized as follows (Yacoub Mahmoud al-Ali, 2023, pp. 174-175):

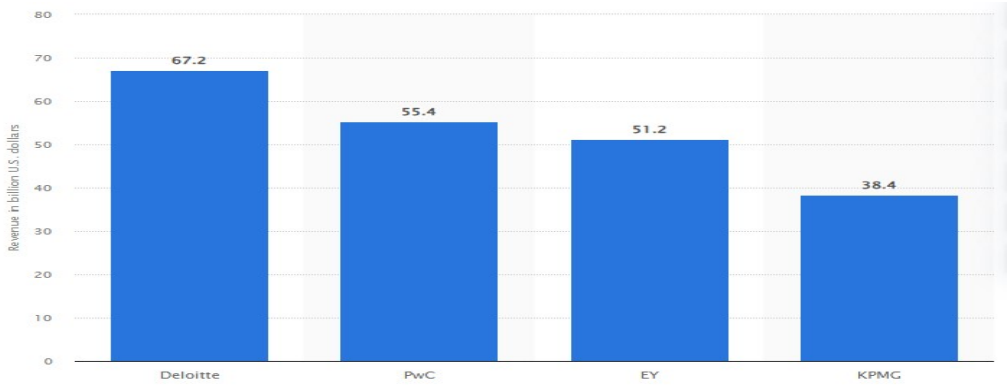
- Although Blockchain ensures that financial transactions are executed securely, it cannot eliminate fraud or misconduct.
- The lack of a central reporting authority in case of a hacking attack may increase risks associated with fraud and deceit.
- Blockchain is a product of human work, and its programs, interfaces, and components are designed and executed by individuals, some of whom may be virtuous or corrupt.
- Users may lose access to their electronic currency, such as Bitcoin, if they lose their private key due to device or software malfunctions. In such cases, special measures for file recovery and backups should be implemented to prevent this scenario.
- Any modification of transaction data recorded in the Blockchain requires the approval of a majority of participants (51%) in the network. While this feature prevents tampering and manipulation of data, it also introduces a security concern known as the "51% attack," where a group of participants (from one node) takes control over substantial resources on the network, allowing them to influence the accuracy and approval of financial transactions and contracts.
- There is an incomplete understanding of the technology, stemming from a lack of knowledge about information technology or cultural resistance to change, which may delay its adoption and implementation.

4. Adoption of Blockchain Technology by Major Auditing Firms

4.1. General Information About Big Auditing Firms

The four largest accounting and auditing firms in the world are Deloitte, PwC, EY, and KPMG. These firms not only provide auditing and accounting services but also offer other high-quality services, including tax and legal consulting. Due to their extensive expertise, they provide most auditing and accounting services to publicly listed companies worldwide. The revenues of the Big Four firms for the year 2024 can be illustrated as follows (Belaid & Benhaoues, 2024, p. 1044):

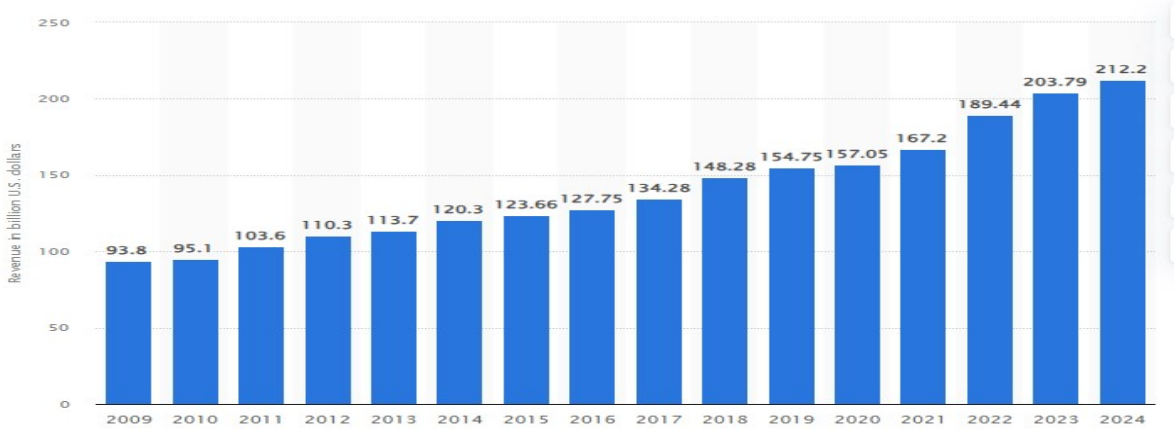
Figure 01: Revenues of the Big Four firms achieved during 2024.



Source: (statistics, Revenue of the Big Four accounting/audit firms worldwide in 2024, https://www.statista.com/statistics/250479/big-four-accounting-firms-global-revenue/, 15/03 /2025)

According to the above figure and data obtained from the "Statista" statistics platform, the numbers show that the Big Four firms achieved significant revenues in 2024. "Deloitte" ranked first with revenues reaching $67.2 billion, followed by "PwC" with revenues of $55.4 billion. "Ernst & Young" recorded revenues of $51.2 billion, while "KPMG" achieved revenues of $38.4 billion.

Figure 02: Revenues of the Big Four Firms Achieved from 2009 to 2024



Source: (statistics, revenue of the Big Four accounting/audit firms worldwide from 2009 to 2024 ,https://www.statista.com/statistics/473959/big-four-accounting-firms-global-combined-revenue/, 15/03/2025)

Based on the data shown in Figure 02, it is clear that the total revenues of the Big Four firms have shown consistent growth over the years, with a significant increase in 2024 compared to previous periods. This growth can be attributed to the increasing reliance of clients on the services of these firms, as they have utilized the latest

technologies, platforms, smart applications, and AI-powered solutions. This has contributed to achieving the client's primary objectives, such as enhancing revenues, improving risk management, reducing costs, and efficiently processing big data.

4.2. Uses of Blockchain Technology by the Big Four Firms in Auditing

The interest in Blockchain technology by major accounting and auditing firms (PwC, Deloitte, KPMG, EY) is evident through their numerous collaborative projects with financial and professional institutions to enhance the auditing of accounting systems (Yacoub Mahmoud al-Ali, 2023, pp. 173-174):

- **Deloitte:** In 2014, Deloitte began creating its own Blockchain platform through its famous application program (Rubix), which allows clients to build their customized platforms on Blockchain technology for executing transactions and smart contracts. Deloitte also provides immediate and direct auditing services using Blockchain technology to accelerate the auditing of transactions and contracts recorded on the Blockchain. In 2017, Deloitte announced that it had completed its first financial audit using Blockchain.
- **KPMG:** Through a strategic partnership with Microsoft, KPMG offers advice and guidance to clients on using Blockchain technology to improve transaction security and speed. It also helps reduce auditing costs, enhances the auditing of financial information, and provides assurance services to its clients.
- **EY:** In 2016, EY announced a six-week challenge aimed at companies such as BTL Tallystics, BlockVerify, Adjiont, and JAAK, focusing on developing Blockchain technology in financial industries and markets. EY partnered in a project with Libra, aimed at securing and providing distributed ledgers.
- **PwC Australia:** PwC Australia tested various Blockchain applications and provided consulting services to clients on its uses. PwC Australia collaborated with Netki, Bloq, and Libra to create Vulcan, a multi-asset Blockchain platform that develops interoperable digital assets for trading with known virtual currencies and storing them. Vulcan represents one of PwC Australia's efforts to adopt Blockchain technology and deliver.

5. Conclusion:

The research paper has reached several conclusions and suggestions, summarized as follows:

5.1. Results :

The findings of the study can be summarized in the following points :

- ✓ Digital transformation has become a necessity across various fields, including the auditing profession.
- ✓ Blockchain technology in auditing allows auditors to continuously and instantly monitor any updates or changes in financial transaction data.
- ✓ Blockchain contributes to reducing time and costs while improving the efficiency and effectiveness of financial transactions.

- ✓ The technology ensures rapid verification of transactions, providing adequate and suitable evidence immediately.
- ✓ Immutable records through blockchain enhance transparency and credibility in auditing processes.
- ✓ Accelerating auditing processes and minimizing the time required for completion are among the key benefits of blockchain technology.
- ✓ Blockchain enables secure and organized data storage, making it easier to access and analyze effectively.
- ✓ The cost of using blockain technology in auditing includes initial investment, maintenance, energy consumption, training, and legal compliance, making it a promising but resource-intensive technology.

5.2. Suggestions

Based on the information provided, several suggestions can be summarized as follows:

- Focus on developing the skills of auditing professionals in the field of information technology to keep up with rapid technological advancements, especially blockchain technology.
- Organize training programs aimed at parties related to the organization to familiarize them with the technology, highlight its importance, and explain the advantages of its application.
- Study the experiences of advanced countries and keep up-to-date with the latest developments in modern technologies, focusing on blockchain applications to support auditing processes.
- Raise awareness among auditing professionals about the importance of information and communication technologies and their impact on their work, through conferences, seminars, and events that combine both academic and professional aspects.

6. List of references:

1. Ahmed khmis, A. (2021). The Impact of digital transformation on the job Performance of Employees in Egyptian Commercial Banks ,. The Scientific Journal for Financial and Commercial Studies and Research, 02(02).
2. Belaid, K., & Benhaoues, k. (2024). The most important Applications of Artificial Intelligence used in the Accounting and Auditing professions -A case study of the reality of the Big Four Firms. Tobna Journal for Academic Studies, 07(01).
3. Belaoura, H. (2024). The relationship of the application of blockchain technology to the quality of the accounting information system (a viewpoint of a group of accounting professors in Algeria). Journal of Economic sciences management and Commercial Sciences, 17(01).
4. Ben ktib, A., & kacmi, s. (2016). "The Role of Auditing in Improving the Quality of Accounting Information in the Context of Information Technology – A Field Study of a Sample of Accountants and Auditors in the Wilaya of Tiaret. El Bahith Review, 16(16).
5. Benmoussa, K., & Taibi, A. (2024). Accountants' Awareness of the Impact of Digital Transformation Technologies on the Accounting Profession: Blockchain as a Case Study - A Field Study on a Sample of Accountants in Algeria-. Al-Manhel Economique, 07(01).
6. Boubata, A. (2024). Impact of digital transformation techniques on improving the quality of external auditing: survey of a group of external auditors in Algeria,. Economic studies and research journal, 08(02).

7. Bouzidi, A., & Ouadi, M. (2020). The impact of the use of information technology on the quality of external audit in Algeria. Journal of Economic and Administrative Research, 14(05).
8. Fouad abdel rahmen ali, W. a. (2022). The Impact of Blockchain Technology on The Role of The External Auditor - An Empirical Study. The Scientific Journal of Commercial and Environmental Studies, 13(04).
9. Haddi madjid el hadj, R., & Abdel wahed zanoun, A. (2023). The Impact of the Adoption of Blockchain Technology on the Stages of External Auditing -An exploratory study. Journal of Business Economics, 04(04).
10. Merah, N., & Touileb, M. (2022). The futur of the Accounting Profession under Didital Transformation Technique- Block chain technology model-. Journal OfAl Mayadine Al Iktissadia, 05(01).
11. Merrah, N. (2024). The Impact of Information and Communication Technology on the Future of the Accounting Profession in Algeria (Doctoral Thesis). Faculty of Economic Sciences, Commercial Sciences and Management Sciences: University of Algiers3.
12. Othman Cherif Ishek, I. (2022). Digital transformation and its impact on the credibility of accounting information. Contemporary Economic Researches, 05(02).
13. Rashwan, A. a. (2020). • The Digital Transformation and its Implications for The Practice of The Accounting and Auditing Profession. The 1st International Conference on Information Technology & business.
14. Simanta , S. (2018). Understanding Blockchain Technology. Computer Science and Engineering, 8(2).
15. statistics. (2025, 03 15). Combined revenue of the Big Four accounting/audit firms worldwide from 2009 to 2024. Récupéré sur https://www.statista.com/statistics/473959/big-four-accounting-firms-global-combined-revenue/.
16. statistics. (2025, 03 15). Revenue of the Big Four accounting/audit firms worldwide in 2024. Récupéré sur https://www.statista.com/statistics/250479/big-four-accounting-firms-global-revenue/.
17. Yacoub mahmoud al- ali, M. a. (2023). The effect of Blockchain technology in enhancing the application of electronic auditing: A prospective study of the opinions of a sample of academics and auditors at the University of Mosul. Tikrit Journal of Administrative and Economics Sciences, 19(64).
18. Zoubari, R. (2024). The International Scientific Conference on Digital Transformation and Its Implications for Sustainable Development. The use of blockchain technology in accounting, 02.