

## **The Effect of Blockchain on Audit Procedures Planning - A Field Study in Saudi Context**

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### **ABSTRACT**

*The study aimed to test the impact of blockchain characteristics on audit procedures planning through a field study on a sample of 181 auditors of joint-stock companies in the Saudi professional practice context. The study concluded in its theoretical aspect that relying on blockchain contributes to increasing transparency and reliability; as it provides an accurate and tamper-proof record of all transactions, which increases the transparency and credibility of operations and reduces the risk of fraud. It improves the efficiency of audit processes; as the auditor can benefit from the data available on blockchain to reduce the time and effort required to implement audit procedures. It reduces costs; as it helps reduce audit costs by providing high-quality data and automating some tasks. It enhances confidence in financial statements; as investors can trust more in the financial statements of companies that use blockchain technology, which contributes to attracting investments. The study concluded in its field aspect that there is a significant impact of blockchain on audit procedures planning in Saudi context. The application of blockchain may affect audit procedures, acceptance of the audit assignment, assessment of audit risks, inherent risks, and control risks and thus detection risks, and implementation of analytical audit procedures.*

**Keywords:** Blockchain; Audit Procedures Planning; Saudi Context

### **1. Introduction:**

Blockchain technology is primarily concerned with transferring ownership of assets and maintaining accurate financial information included in the distributed ledger. Blockchain technology was first used in 2008, as the main platform for the virtual Bitcoin currency, which has derived its strength and the confidence of its users, at least so far, thanks to that system

(Abdul Qader, 2022).

Blockchains have many features that distinguish them from other accounting systems, as the data stored on the chain cannot be modified, in addition to the transparency of transactions on the chain, the possibility of verifying transactions, and the possibility of reviewing all transactions that took place on the chain at the same moment they occurred. These features may be suitable for the accounting and auditing profession (Abdul Hamid, 2023). Blockchain technology also represents a ledger that includes exchanges, contracts, and invoices for thousands of people dealing with the chain, as records are collected together within the chain, but it cannot be updated or changed except with the approval of all parties on the chain. Therefore, it allows verification of the validity of records without using a central authority, and thus it changes the way accounting and auditing are conducted (Simon et al, 2017).

Blockchains offer several distinct characteristics that make them a unique and pivotal technology in many modern digital uses, including decentralization, as blockchains allow data to be stored across a network of devices instead of on a single central server, which makes it more difficult to manipulate data. In addition to transparency, which enables anyone in the network to access the full transaction history, allowing for a high level of visibility. As well as tracking, which enables transactions or assets to be tracked efficiently by recording every movement or transfer in the chain, which makes it an ideal tool for tracking in supply chains and logistics operations (Hussein, 2023).

Opinions have been divided on the relationship between blockchains and the auditing profession. Some believe that this technology has the potential to eliminate the auditing profession (Al-Sharqawi and Abu Al-Maati, 2019), while others believe that it can help develop the auditing process (Al-Sagheer, 2020), which will inevitably lead auditors to understand this technology because it will be applied in the companies being audited. The role and skills of auditors and the way they carry out their tasks may change, which means that their skills must be increased as a result of the expansion in the adoption of this technology in the business world (Hassan, 2020).

The study problem revolves around answering the following main research question: What is the impact of applying blockchains on audit procedures planning in the Saudi professional practice context?

Therefore, the study aims to test the impact of applying blockchains on audit procedures planning through a field study on a sample of auditors of joint-stock companies in the Saudi professional practice context. This study derives its scientific importance from clarifying the impact of blockchains on audit procedure planning. Thus, the current study is in line with accounting research that addressed the impact of modern technology on the accounting and

auditing profession and its reflection on the quality of accounting information and audit quality. It also highlights knowledge gaps and shows the challenges that must be faced to achieve effective integration between blockchain technology and auditing, which supports technological development, innovation and professional performance. The practical importance of this study is to help audit firms in the Kingdom of Saudi Arabia understand the impact of blockchains on audit procedure planning, which may be reflected in improving the efficiency of auditing processes. As well as the growing scientific and applied value of this technology in the global financial and commercial sectors. Therefore, it is necessary to understand how this technology brings about profound transformations in auditing processes, which is of great importance to auditors, regulatory bodies and policy makers alike.

The scope of this study is limited to testing the impact of one of the modern technologies, namely blockchains, on planning the audit process procedures through a field study. The scope of the research does not extend to studying the impact of other modern technologies such as artificial intelligence tools on the audit process. The scope of the study is also limited to the audit procedures planning without other steps of the audit process.

## **2. Literature Review and hypotheses**

### **2.1. Blockchain technology**

Blockchain technology is one of the most important accounting topics that has sparked widespread controversy in accounting thought recently. In light of the continuous development of technology, the so-called Fourth Industrial Revolution and its accompanying technologies have emerged, which are represented by block chains, cloud computing, artificial intelligence and Internet of Things, which will clearly affect the accounting profession; therefore, information systems technology must be integrated with financial and accounting skills (Al-Naqoudi, 2023).

In keeping with the requirements of the accounting revolution, blockchains are one of the technologies that have revolutionized the world of innovation, leading to changes in the environment in terms of technological progress, competition, the disappearance of geographical borders, and trade barriers between products in markets and services, and increasing the aspirations of individuals to have services and products available to them as quickly as possible, with the highest quality, and at the lowest cost. From this logic, business establishments have thought carefully about abandoning traditional technological methods and moving towards modern technological methods such as blockchain technology (Enrique & Michaela, 2019).

Fanning & Centers (2016) defines it as: A distributed database that maintains a constantly growing list of data records that are hardened against tampering and manipulation, even by data

storage node operators. It is viewed as a public ledger of all transactions that have ever been executed within the network. It is constantly growing as completed blocks are added to previous blocks that form a chain. Importantly, blocks are added to the chain in a linear chronological order. Blockchains contain complete and accurate information about addresses and their balances right from the genesis block to the most recently completed block.

As defined by Shehab (2018), it is an anti-hacking records consisting of a distributed database that is characterized by the ability to manage a continuously growing list of records called blocks containing a timestamp with a link to a previous block so that this chain makes the data available to all users while maintaining its security, without the ability to modify those blocks. Every time the information is accessed and updated, this change is recorded and locked by encryption to become unmodified again, and the next time someone wants to make a change, the information is saved in a new block that is linked to the previous block.

Pradhan (2018) defines it as a distributed digital ledger that records transactions in an encrypted form in the form of blocks. This is done after transactions are authorized between participants called nodes. Each block includes the authorized transaction added to the last block in the blockchain. The order is then published on every point in the network, and you can view the transactions but cannot delete or change them.

Blockchains are also known, according to Pradhan (2018), as a system that allows a group of connected computers to create a central ledger to verify, authenticate, and save data and transactions in a long chain of encrypted data on millions of points called nodes around the world, allowing many parties to enter and verify information, so that each point, computer, or entity in the chain has the same copy of this data and information, and each time contracts and agreements are added to the chain, their validity is verified and verified before they are added according to the consensus mechanism followed in block chains, so that in the end, an encrypted and secure public record is formed that cannot be tampered with or modified.

While Abdul Salam (2018) defines it as a distributed database that has the ability to manage an increasing list of records called blocks, each block containing a timestamp and a link to the previous block. The Economic and Social Commission for Western Asia defines it as a decentralized database used to store any type of data, including financial transactions, that cannot be tampered with, and this technology contributes to building trust among customers because it prevents any manipulation of the lists that it maintains within sequential and growing records (Economic and Social Commission for Western Asia, 2019).

Rabi (2020) stated that blockchain technology is an innovative method for indexing data and preserving shared records, which leads to the availability of an element of trust in transactions

through the participants' consensus on the validity of the data. It can also be viewed as a database (a distributed digital ledger) that is concerned with recording transactions in a way that cannot be modified or changed, and transactions are recorded in a chronological manner that approximates the actual time of the event. That is, it is a technological protocol that allows the exchange of data directly between contracting parties within the network without the need for intermediaries. Each transaction is encoded in a cryptographic language and added to a fixed transaction chain, and this chain is distributed to all network nodes (ledgers), thus preventing any manipulation or distortion in the chain itself. Accordingly, blockchain technology uses a cryptographic language that is linked to data records (blocks) that allow the management of the record for all transactions that take place through the decentralized ledger (public ledger). Thus, it explains how ownership is transferred without the need for a central authority to verify the accuracy of the information, due to the presence of the peer-to-peer feature.

Muhammad and Tobal (2020) define it as: a set of transaction records linked together in a sequential and encrypted manner, distributed across the various nodes that make up the network on which it is based, relying on a set of computer technologies such as distributed ledger technology, peer-to-peer network, and encryption algorithms. Among the definitions provided for blockchain technology are those provided by IBM and Forbes as: a shared, instant, encrypted, and decentralized electronic recording system for processing and recording financial transactions, contracts, trading of physical assets, supply chain information, and others. There is no single person or entity responsible for the entire chain, but rather it is an open system and all participants in the chain can view the details of each record or what is known as the block, in addition to tracking information via a secure network that does not require verification by a third party (Nafisa, 2020).

Al-Nuqodi (2023) defines it as a giant spreadsheet to record all assets and at the same time it is a global accounting system, i.e. a decentralized database that allows information to be verified and communicated in real time. It is enhanced with encryption to protect and secure information, as each user has a fictitious electronic name other than his real name, and this name is used in the digital exchange process to verify users' balances and data without disclosing their true information.

Badr's study (2023) defines it as a digital ledger that stores data and transactions between individuals in a safe and reliable manner without the need for an intermediary, and the validity of transactions that occur through encrypted signatures is verified by the majority of participants in the network, and then it is not possible to tamper with or cheat in transactions circulating between individuals, which gives this technology the quality of trust among other technologies.

Muhammad's study (2023) defines it as a decentralized, sequential database that allows data and

information to be shared and preserved against tampering, and secured using high-precision encryption methods that cannot be hacked or modified, and are available to network members through millions of computers connected to the Internet.

In light of the previous presentation, the researchers defines blockchains as: an advanced database technology that allows information to be shared transparently and securely within a network of devices. It is like a sequential and distributed digital record, where all transactions and data are recorded in interconnected blocks, making it extremely difficult to change, manipulate, or hack them.

## **2.2. The relationship between blockchains, audit procedures planning**

Hassan's study (2020) aimed to identify the impact of using blockchains in supporting the external auditor's opinion on the fairness of financial statements. The study reached several results, the most prominent of which are: Blockchains have brought about a profound change in the audit process by reducing the time of the audit process itself and giving more time to verify how information flows between systems. Instead of conducting audits at regular intervals, blockchains provide the possibility of conducting a continuous review, which allows problems to be addressed proactively. It also concluded that blockchains will change the way the external auditor works, as they improve the process of collecting data during the audit process and allow them to implement electronic audit procedures. This is accompanied by many opportunities and challenges facing the external auditor when auditing accounting systems based on blockchains.

Mahmoud and Abu Al-Nadr's study (2020) aimed to analyze the relationship between the adoption of blockchain technology by audit clients and audit firms and its reflection on audit tests and determining the appropriate audit model, the auditing profession, and the organizational structure in audit firms. The results of the study indicated that audit tests tend towards control tests instead of traditional audit tests, the availability of the elements for the success of the continuous audit model, the emergence of new roles for auditors, and the impact on the organizational structure of audit firms.

Ibrahim's study (2021) aimed to identify the impact of using blockchains on audit and review procedures from the point of view of Jordanian certified public accountants. The study concluded that there is a significant impact of using blockchains on external audit procedures, a significant impact of using blockchains on accepting the audit assignment, a significant impact of using blockchains on planning the audit process, a significant impact of using blockchains on assessing audit risks, and a significant impact of using blockchains on implementing analytical audit procedures.

Al-Batoush (2021) aimed to identify blockchain technology, the nature of its work and its

characteristics, and also aims to determine the impact of using blockchain technology on the auditing profession in Jordan. It concluded that there is a statistically significant impact of blockchain technology on the auditing profession. This result means that the audited companies have a distributed database of records and all digital transactions or events that have been implemented.

Musa (2022) aimed to test the impact of the audit client's adoption of blockchain technology on the external auditor's judgment regarding planning the level of discovery risk and then audit procedures planning. It concluded that the level of both inherent and control risk increases in light of the audit client's use of blockchain technology, which prompts external auditor to plan detection risk at a low level and conduct a large amount of audit procedures and verify all community components immediately to collect sufficient evidence necessary to express a technical opinion on financial statements.

Metwally (2022) aimed to test blockchain technology and the implications of the information derived from it, highlight the relationship between blockchain technology information and its role in the audit process procedures planning from the perspective of the opinions of the relevant regulatory and professional bodies, and identify the expected roles and tasks of the auditor when planning the audit process procedures in light of the information derived from blockchain. The results indicated that blockchain technology contributes to the availability of accurate data and information, and can be verified in a faster way because there is a record of all transactions, which enables the auditor to verify a large part of the financial data automatically, and that relying on blockchain technology and the information resulting from it in the audit process planning works to reduce the level of the auditor's modified opinion and works to narrow the gap of potential fraud manifestations and thus increase the effectiveness of audit procedures planning, which in turn contributes to improving the quality of audit evidence and developing the efficiency of the audit process.

Assaf and Al-Tantawi (2022) addressed the role of blockchain technology in increasing the effectiveness of external audit as a mechanism of corporate governance by focusing on the role of blockchain in increasing the effectiveness of corporate governance in general, and external audit in particular. The study concluded that external auditing has been affected by the application of blockchain technology in many matters, including providing a digital ledger based on a database based on blockchain instead of the general ledger, automating many processes, shifting from continuous auditing to real-time auditing, creating future jobs, tasks and new skills for auditors such as smart contract auditing, providing management consulting and necessary analytical studies in light of the application of this technology. This study confirms that the potential change in the auditor's role has a significant impact on increasing the degree of information transparency and reducing agency costs and information asymmetry, which leads to

increasing the effectiveness of corporate governance.

Abdul Qader's study (2022) aimed to identify the impact of applying blockchain technology on external auditing, and how its application leads to a transformation in the auditing process. Since blockchains are the largest open digital record of distributed transactions that allows the transfer of ownership from one party to another at the same time without the need for an intermediary and cannot be changed or modified due to the use of encryption methods, the application of blockchains has brought about a transformation in the auditing profession. The most important aspects of this transformation are summarized in: reducing the auditing process time, accuracy of information, verifying the integrity of operations, creating more efficient audit paths, conducting continuous audits, speeding up error detection, and detecting fraud. The application of blockchains has brought about a real transformation in the auditing process, as audit firms have changed the planning and design of auditing methodologies and implementing their financial statement audits, which will transform the scope of the auditing profession from attesting financial statements to testing information systems, and more specifically, attesting to the proper implementation of blockchains, which helps provide higher quality audit evidence and improves the quality and efficiency of the audit. The study also presented the developments brought about by the application of blockchains, which have brought about a clear transformation in the roles of external auditors, as they have to adapt and acquire modern technological skills to deal with blockchains, and to effective and reliable tools. There are also potential new roles for auditors in light of the application of blockchains, which allow them to spend more time exercising their professional judgment, as this will require professional skepticism and critical thinking by auditors, which will lead to increasing the efficiency of auditors and developing their skills using modern auditing methods that rely on the use of computers and are compatible with the electronic environment, and contribute to improving the capabilities of the external auditor in fulfilling his responsibilities, all of which shows the extent of the impact of the application of blockchains on external auditing.

Al-Hilalat (2022) aimed to determine the expected impact of applying blockchains on the quality of accounting information. The results of the study concluded that there is a statistically significant impact of applying blockchain technology on the quality of accounting information. The results of the study also concluded that there is a statistically significant impact of applying blockchain technology on the main characteristics of the quality of accounting information (truthful representation and relevance). It also concluded that there is a statistically significant impact of applying blockchain technology on the characteristics that support the quality of accounting information (timeliness, understandability, verifiability, comparability).

Daif (2023) aimed to test the extent of the impact of digital transformation technology from big data, blockchains, cloud computing and artificial intelligence on the quality of external audit



work. The results of the field study concluded that there is a significant impact of using digital transformation tools from big data, blockchains, cloud computing and artificial intelligence on the efficiency and effectiveness of the audit, which is reflected in the quality of audit work.

Aly (2023) aimed to test the relationship between the audit client's adoption of blockchain technology and the delay period of the auditor's report on the audit of the full annual financial statements. The results of the study showed that the audit client's adoption of blockchain technology significantly affects the delay period of the auditor's report on the audit of the full annual financial statements, and that the moderating effect of the auditor's experience, in terms of his registration with the Financial Regulatory Authority, and the size of accounting and auditing on the influential relationship between the audit client's adoption of blockchain technology and the delay period of the auditor's report on the audit of the full annual financial statements in the Egyptian professional practice environment, was also significant. In addition, there was a significant effect of the auditor's continuous professional development as a moderating variable in the context of the influential relationship under study.

Abdul Razzaq's study (2023) aimed to analyze the impact of the blockchain mechanism to add value to forensic auditor to accomplish forensic accounting work efficiently and effectively, and its reflection on reducing financial and administrative corruption practices in companies, and the resulting fraud and deception crimes. the study concluded that: there is a fundamental impact of the awareness of those working in the field of accounting and auditing of the importance of forensic accounting on both reducing financial and management corruption practices in companies, and the use of the blockchain mechanism as a mechanism for forensic accounting, and the skills that accountants and auditors must have to become forensic auditors.

Nafeh's study (2023) aimed to clarify the impact of the fourth industrial revolution technologies (blockchains and cloud computing) on the accounting and auditing profession. the study concluded that the fourth industrial revolution technologies changed the concepts of planning and analyzing accounting information systems, improved the quality of financial reports, re-estimated accounting and evaluated analytical auditing, and the emergence of new fields such as auditing by exception, automatic auditing, and financial analysis of big data, greatly reducing the traditional manual tasks of the accountant and internal and external auditor and replacing them with analytical and advisory tasks and exchanging roles between humans and robots in conducting accounting processing and internal control procedures.

To achieve the objectives of the research, based on the nature of the problem, and guided by the findings of previous studies, the main hypothesis of the research can be formulated as follows:

**hypothesis:** The application of blockchains has a significant impact on audit procedures planning

in Saudi environment.

### **3. Methodology**

#### **3.1. Study community and sample**

The population consists of auditors of Saudi joint-stock companies, and the sample amounted to 181 auditors.

#### **3.2. Study measures and variables tool**

The study used the questionnaire as a study tool, and the questionnaire form consisted of two sections, the first section includes personal data of participants (gender, age, educational qualification, experience years, professional certificates). The second section includes statements related to measuring the impact of blockchain features on audit procedures planning, and includes nineteen statements and a five-point Likert scale consisting of completely agree (5), agree (4), neutral (3), disagree (2), and absolutely disagree (1) was used to answer the study questions.

#### **3.3. Personal characteristics of participants**

154 participants were male (85.1%) and 27 were female (14.9%). 37 participants were under 30 years of age (20.4%), 65 participants were between 30 and under 40 years of age (35.9%), 47 participants were between 40 and under 50 years of age (26%), and 32 participants were 50 years of age or older (17.7%). 79 participants were bachelor's degree (43.6%), 35 participants were higher diploma in accounting (19.3%), 40 participants were master's degree (22.1%), and 27 participants were doctorate degree (14.9%).

23 participants had less than 5 years of experience (12.7%), and 53 participants had 5 to less than 10 years of experience (29.3%). 49 participants had experience of 10 to less than 15 years, representing 27.1%, and 56 participants had experience of 15 years or more, representing 30.9%. It was found that 59 participants had a professional certificate of fellowship from the Saudi Organization for Certified Public Accountants, representing 32.6%, and 46 participants had a professional certificate of certified internal auditor, representing 25.4%, and 47 participants had a professional certificate of professional management accountant, representing 26%, and 29 participants had a professional certificate of value-added tax specialist, representing 16%.

#### **3.4. validity of the study tool**

The validity of the study tool was calculated using Alpha-Cronbach and the results were as follows:

**Table (1) Proposed validity of the questionnaire summary**

Main topics	Cronbach's alpha coefficient	Number of statements
The Impact of blockchains on Audit Procedures Planning	0.989	19

It is clear that the value of Cronbach's alpha coefficient for questionnaire form reached 0.989, which is greater than 0.7, which confirms the validity and correlation of the statements of the axes of the questionnaire form and the high level of validity of the study tool, which allows the tool to be used for the purpose of the study.

**3.5. Testing the study hypotheses**

The hypothesis aims to test the extent of the impact of blockchains on the audit procedures planning in Saudi Context. To test the hypothesis, sign test was used and the value of the hypothetical mediator = 3 and the results were as follows:

**Table No. (2) Results of the sign test for the impact of blockchains on audit procedures planning**

	Statement	Median	St. Deviation	Order	Level of Agreement	Sign Test Value	p-value	Statistical Significance
1	affects audit procedures planning in a way that helps improve the efficiency of the audit process	4.08	1.07	2	High	8.158	0.000	Statistically significant

2	Affects the accurate determination of the scope of the audit, which contributes to achieving the audit objectives effectively	3.66	1.13	9	High	9.591	0.000	Statistically significant
3	Affects the development of a comprehensive audit plan, which reduces the possibility of errors occurring during the audit process	3.63	1.04	11	High	12.234	0.000	Statistically significant
4	Assists in pre-planning of audit procedures by identifying potential risks before starting the audit process.	3.81	1.12	6	High	4.874	0.000	Statistically significant
5	affects the audit procedures planning in a way that contributes to saving time and resources during the audit process	3.95	1.04	3	High	5.942	0.000	Statistically significant

6	Affects effective communication between the audit team and relevant parties, which contributes to the success of the audit plan.	3.43	1.17	16	High	5.889	0.000	Statistically significant
7	Affects the accurate determination of the timetable, which is one of the most important steps in audit procedures planning.	3.50	1.14	15	High	9.485	0.000	Statistically significant
8	Affects the allocation of tasks to audit team members according to specializations, which contributes to improving the quality of the audit.	3.55	1.26	13	High	1.390	0.000	Statistically significant
9	It affects the planning of audit procedures to help ensure compliance with regulatory standards and laws.	3.79	1.12	7	High	4.208	0.000	Statistically significant

10	It affects the periodic follow-up of the audit plan to ensure that objectives are achieved effectively and deviations from the path are reduced.	2.86	1.34	19	Medium	6.664	0.000	Statistically significant
11	Affects the auditor's assessment of the risks of material misstatement in the financial statements, including control risks and associated risks	3.39	1.25	17	High	2.891	0.000	Statistically significant
12	Affects the determination of the level of materiality at the financial statement level and its distribution across accounts, balances and disclosures	3.57	1.16	12	High	11.069	0.000	Statistically significant

13	Affects the nature, extent and timing of planned audit procedures to collect sufficient and appropriate evidence	3.26	1.12	18	Medium	16.909	0.000	Statistically significant
14	Affects the understanding of the results of analytical procedures performed to identify unusual relationships and trends in the financial statements	3.90	1.09	4	High	10.639	0.000	Statistically significant
15	Affects the understanding, testing and documentation of the client's internal control structure	4.12	0.89	1	High	8.574	0.000	Statistically significant
16	Affects the understanding of the level of complexity of the audit client's operations, activity and industry	3.85	1.07	5	High	7.611	0.000	Statistically significant

17	Affects the determination of the necessary resources and capabilities that should be used to perform the audit.	3.73	1.15	8	High	5.915	0.000	Statistically significant
18	It affects the determination of the extent of reliance on internal audit work, whether in direct assistance or evidence collection.	3.65	1.15	10	High	6.129	0.000	Statistically significant
19	It affects the assessment of the extent of the need to seek the assistance of specialists, whether through the client or through the audit office.	3.54	1.23	14	High	3.615	0.000	Statistically significant
Total		3.65	1.14		High			

Table No. (2) shows that the median for the statements of the impact of blockchains on audit procedures planning reached (3.65) degrees out of (5), which indicates a high level of the impact of blockchains on audit procedures planning in audit offices in the Kingdom of Saudi Arabia from the point of view of the study sample members, as the availability rate reached 73%. It was found that seventeen statements were in the high degree of agreement and two statements were in the medium degree of agreement. With regard to the phrases of the impact of blockchains on audit procedures planning in audit offices in the Kingdom of Saudi Arabia, the arrangement of its statements came as follows:



- The statement "affects understanding, testing and documenting the client's internal control structure" came in first place with a median of (4.12) degrees out of (5), which indicates the availability of this variable to a high degree and an availability rate of 82.4%. The significance of the phrase was shown in the sign test and the presence of statistically significant differences at the 0.05 level.
- The statement "affects audit procedures planning in a way that helps improve the efficiency of the audit process" came in second place with a median of (4.08) degrees out of (5), which indicates the availability of this variable was high with an availability rate of 81.6%. The significance of the statement was shown in the sign test and there were statistically significant differences at the 0.05 level.
- The statement "affects the audit procedures planning in a way that contributes to saving time and resources during the audit process" came in third place with a median of (3.95) points out of (5), indicating the availability of this variable to a high degree and an availability rate of 79%. The significance of the statement was shown in the sign test and there were statistically significant differences at the 0.05 level.
- The statement "affects the understanding of the results of analytical procedures that are implemented for the purpose of understanding unusual relationships and trends in the financial statements" came in fourth place with a median of (3.90) points out of (5), indicating the availability of this variable to a high degree and an availability rate of 78%. The significance of the statement in the sign test and the presence of statistically significant differences at the 0.05 level.
- The statement "affects understanding the level of complexity of the audit client's operations, activity and industry" came in fifth place with a median of (3.85) points out of (5), indicating the high availability of this variable and an availability rate of 77%. The significance of the statement in the sign test and the presence of statistically significant differences at the 0.05 level.
- The statement "helps in audit procedures planning in advance to identify potential risks before starting the audit process" came in sixth place with a median of (3.81) points out of (5), indicating the high availability of this variable and an availability rate of 76.2%. The significance of the statement in the sign test and the presence of statistically significant differences at the 0.05 level.
- The statement "affects audit procedures planning in a way that helps ensure compliance with regulatory standards and laws." In seventh place with a median of (3.79) points out

of (5), indicating a high degree of availability of this variable and an availability rate of 75.8%. The significance of the statement was shown in the sign test and there were statistically significant differences at the 0.05 level.

- The statement came "affects the determination of the necessary resources and capabilities that should be used to perform the audit process." In eighth place with a median of (3.73) points out of (5), indicating a high degree of availability of this variable and an availability rate of 74.6%. The significance of the statement was shown in the sign test and there were statistically significant differences at the 0.05 level.
- The statement came "affects the precise determination of the scope of the audit that contributes to achieving the audit objectives effectively." In ninth place with a median of (3.66) points out of (5), indicating a high degree of availability of this variable and an availability rate of 73.2%. The significance of the statement was shown in the sign test and there were statistically significant differences at the 0.05 level.
- The statement "It affects the determination of the extent of reliance on internal audit work, whether in direct assistance or evidence collection" came in tenth place with a median of (3.65) points out of (5), indicating the availability of this variable to a high degree and an availability rate of 73%. The significance of the statement was shown in the sign test and there were statistically significant differences at the 0.05 level.
- The statement "It affects the development of a comprehensive audit plan that reduces the possibility of errors occurring during the audit process." came in eleventh place with a median of (3.63) points out of (5), indicating the availability of this variable to a high degree and an availability rate of 72.6%. The significance of the statement was shown in the sign test and there were statistically significant differences at the 0.05 level.
- The statement "affects the determination of the level of materiality at the level of financial statements and its distribution at the level of accounts, balances and disclosures" came in twelfth place with a median of (3.57) points out of (5), indicating the availability of this variable to a high degree and an availability rate of 71.4%. The significance of the statement was shown in the sign test and there were statistically significant differences at the 0.05 level.
- The statement "affects the allocation of tasks to members of the audit team according to specializations, contributing to improving the audit quality" came in thirteenth place with a median of (3.55) points out of (5), indicating the availability of this variable to a high degree and an availability rate of 71%. The significance of the statement was shown in

the sign test and there were statistically significant differences at the 0.05 level.

- The statement "affects the assessment of the need to seek the assistance of specialists, whether through the client or through the audit office" came in fourteenth place with a median of (3.54) points out of (5), which indicates the availability of this variable to a high degree and an availability rate of 70.8%. The significance of the statement was shown in the sign test and there were statistically significant differences at the 0.05 level.
- The statement "It affects the accurate determination of the timetable, which is one of the most important steps in audit procedures planning." came in fifteenth place with a median of (3.50) points out of (5), indicating that this variable is highly available and has an availability rate of 70%. The significance of the phrase was demonstrated in the sign test and there were statistically significant differences at the 0.05 level.
- The statement "It affects effective communication between the audit team and relevant parties, contributing to the success of the audit plan." came in sixteenth place with a median of (3.43) points out of (5), indicating that this variable is highly available and has an availability rate of 78.6%. The significance of the statement in the sign test and the presence of statistically significant differences at the 0.05 level.
- The statement "affects the auditor's assessment of the risks of material misstatements in the financial statements, including control risks and associated risks" came in seventeenth place with a median of (3.39) points out of (5), indicating the availability of this variable to a high degree and an availability rate of 76.2%. The significance of the statement in the sign test and the presence of statistically significant differences at the 0.05 level.
- The statement "affects the nature, extent and timing of planned audit procedures to collect sufficient and appropriate evidence" came in eighteenth place with a median of (3.26) points out of (5), indicating the availability of this variable to a medium degree and an availability rate of 65.2%. The significance of the statement in the sign test and the presence of statistically significant differences at the 0.05 level.
- The statement "affects the periodic follow-up of the audit plan to ensure the effective achievement of objectives and reduce deviations from the path." In the nineteenth place, it reached (2.86) points out of (5), which indicates the availability of this variable to a medium degree and an availability rate of 57.2%. The significance of the statement was shown in the sign test and there were statistically significant differences at the 0.05 level.

To test the study hypothesis that aimed to test the impact of blockchains on audit procedures planning in the Saudi environment, a single-sample sign test was conducted for all blockchain statements in the audit procedures planning for the axis as a whole. It was found that all statements were statistically significant at a significance level of 0.05, meaning that there were significant differences between the median of each statement and the hypothetical median. thus the null hypothesis that blockchains do not have a significant impact on the planning of audit procedures in the Saudi environment is rejected. The alternative hypothesis that there is a significant impact of blockchains on the planning of audit procedures in the Saudi environment is accepted.

The results of the study hypothesis test were consistent with previous studies (Hassan 2020, Mahmoud and Abu Al-Nadr 2020, Ibrahim 2021, Al-Batoush 2021, Musa 2022, Metwally 2022, Daif 2023), which concluded that blockchains have profoundly changed the audit process by reducing the time of the audit process itself and giving more time to verify how information flows between systems instead of conducting audits at regular intervals, and that blockchains provide the possibility of conducting a continuous audit, which allows problems to be addressed proactively, and that blockchains will change the way the external auditor works as it improves the process of collecting data during the audit process and allows them to implement electronic audit procedures, and that the use of blockchains affects audit procedures, the acceptance of the audit assignment, the assessment of audit risks, and the implementation of analytical audit procedures. This leads to an increase in the level of both the associated risk and the internal control risk, which prompts the auditor to plan the detection risk at a low level and conduct a large amount of audit procedures and verify all the components of the community immediately to collect the sufficient amount of evidence necessary to express a technical opinion on the financial statements.

#### **4. Discussion and Conclusion**

The study aimed to test the impact of blockchain characteristics on audit procedures planning through a field study on a sample of 181 auditors of joint stock companies in the Saudi professional practice context. The field study concluded that is a significant impact of blockchains on audit procedures planning in the Saudi context. Blockchains have profoundly changed the audit process by reducing the time of the audit process itself and giving more time to verify how information flows between systems instead of conducting audits at regular intervals. Blockchains also provide the possibility of conducting a continuous review, which allows problems to be addressed proactively. Blockchains also change the way the external auditor works, as they improve the process of collecting data during the audit process and allow them to implement electronic audit procedures. The use of blockchains also affects audit procedures, the acceptance of the audit assignment, the assessment of audit risks, and the implementation of

analytical audit procedures. This leads to an increase in the level of both the inherent risk and the internal control risk, which prompts the auditor to plan the detection risk at a low level and conduct a large amount of audit procedures and verify all the components of the community immediately to collect the sufficient amount of evidence necessary to express a technical opinion on the financial statements.

Based on the findings of the research, both theoretical and field, the following recommendations can be made:

- The need for accountants and auditors to develop their skills and professional commitment and increase learning and development to keep pace with modern technologies and adequate preparation to adapt to future roles and the challenges that accompany them.
- The need to take into account the effects of audit clients adopting modern technological techniques on the audit process, starting from accepting the assignment through planning and implementing the audit process and ending with providing an independent opinion on the truth and fairness of the financial statements.
- Work on providing professional guidelines that regulate the performance of the auditor's work in light of the expected increase in technological techniques that companies are expected to adopt in the coming few years, which will be reflected in the quality of the audit and the confidence of the participants in financial information and thus the efficiency of the financial market.

Based on the findings of the research, the researchers believe in the importance of future research in some related fields, the most important of which are the following:

- Study and test the impact of blockchains on the quality of accounting information, and reduce opportunistic behavior of management.
- Study and test the impact of blockchains on the auditor's practice of professional skepticism and the soundness of his judgments regarding the assessment of the risks of material misstatements in the financial statements.
- Study the integration between the application of blockchains by companies and the continuous audit process on the efficiency of the financial market.
- Study the skills that the accountant and auditor must acquire to deal successfully with the blockchain environment.

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