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THE IMPACT OF USING BLOCK CHAINS ON IMPROVING THE QUALITY OF THE AUDIT PROCESS IN IRAQ

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Abstract:

The main objective of the research study is to try to discover the impact of applying blockchain technology on improving audit quality in Iraq To this end, the researcher relied on a questionnaire distributed to external auditors and faculty, The research found a moral impact between the use of blockchain technology on the quality of the audit process digital blockchains provide transparency and data privacy, increasing objectivity when the auditor relies on data, Providing evidence of relative importance to the element under scrutiny increases the auditor's persuasion as well as fast access to data and easy retrieval by the auditor, In addition to the possibility of continuous auditing, and finally supporting the independence of the auditor where under digital block chains there is no need for management reports, Because the auditor and management are members of the network, the research recommends that the chains of blocks should be adopted by large sectors such as banks and Iraqi government entities for business development.

Keywords: Block Chains - Quality Auditing.

Introduction:

One of the most significant contemporary technologies is block chain technology, which guarantees the legitimacy and correctness of transactions while enabling digital asset exchange and transaction completion. It operates on transactions and secures them through the Internet since it is transparent and reliable. Block chain technology also helps with information management since it preserves data in a decentralized way, arranges it into a series of links that connect data and various transactions related to the same thing, and allows for the auditing of every transaction that occurs on the chain at the same time as it does. Because blockchain technology is based on reducing human errors, increasing operating efficiency, and reducing tampering and fraud in accounting records while saving time and money, it can therefore have a positive impact on the quality of auditing. This calls for consideration of integrating blockchain technology into the auditing profession. (Belkhiri, Home, 2023).

Research problem :

It is a result of the application of block chain technology; The method followed by the external auditor to carry out his work and express his neutral and independent technical opinion on the outcome of the companies' actions will change. He will also face some challenges and obstacles that he must overcome. He must also examine and evaluate the risks of implementing this modern technology, and provide sufficient assurance to stakeholders that the financial statements of those companies It has been audited and presents fairly its financial position. As a result, it is necessary for both organizations and auditors to explore opportunities to apply this technology to benefit from the huge number of advantages it provides. Likewise, there must be sufficient preparedness among both organizations and auditors to face the challenges associated with this technological revolution (Hassan, Al-Murr, 2020), and through... The above can crystallize the research problem in the following main question: "What is the impact of using the application of block chains on improving the quality of the auditing process in Iraq?" It consists of the following sub-questions :

1. Does the use of block chain technology provide appropriate audit evidence upon which the auditor relies in expressing his opinion on the fairness of the Iraqi financial statements?
2. What are the opportunities and challenges that the auditor can face under this technology?
3. Has the application of blockchains affected the quality of the audit process?

Previous studies:

Research (William Cong & Yang & Cao, 2019) The study examined the external auditor's function in providing an assessment of the financial statements' fairness. It also examined the extent of changes to audit procedures under the systems, as well as the significance of block chains in enhancing the efficiency and applicability of gathering relevant audit evidence. accountancy using blockchain technology. According to the study's findings, the use of blockchain technology in accounting systems helps to ensure the accuracy of both financial and non-financial information reported in financial reports. It also assists the auditor in gathering relevant

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audit evidence that can be trusted when auditing blockchain-based accounting systems.

A (2019 study by Manlu, Kean, and Jennifer) examined how blockchain technology is affecting the accounting and auditing industries, starting with how it records and processes transactions and maintains records and how it helps to reshape the auditing profession. It described the advantages and disadvantages of the two kinds of blockchains in relation to the nature of the job performed by external auditors. How to alter the auditing process for both financial and non-financial data. The study discovered that, in light of blockchain-based accounting systems, auditors now play a number of new roles and that, in order to adapt to the new auditing of blockchains, auditors need possess a wide range of abilities.

The 2019 study (Bednarova and Bonson) discussed block chain technology as a technological revolution that will change business sectors and as the next phase of the digital age. The study discovered a number of benefits linked to block chains, particularly in relation to decentralization, flexibility, and encryption. It also discovered certain obstacles to the efficient use of that technology and the effect of block chains on the quality attributes of accounting data and electronic auditing entries.

A study (Zhiyong Li, 2017) examined block chain technology and the level of security and trust it offers for online transactions. This system's degree of immutability, decentralization, and encryption confers strength onto it. According to the report, there are some benefits to using blockchain technology in the audit process planning process because it will alter the auditor's workflow. It also discovered that there may be certain difficulties when block chains are used more widely, such as the absence of global norms and regulations controlling this technology. the inadequacy of knowledge held by individuals within institutions.

Because the use of block chain technology will alter the duties and obligations of the external auditor, the researcher feels that no prior study has examined the effect of using block chains on raising the caliber of the audit process in Iraq. The external auditor will use a different approach to complete his assignment and provide his unbiased, independent technical opinion on the outcome. Iraqi businesses will also have to overcome some difficulties and roadblocks in addition to assessing the dangers associated with utilizing this cutting-edge technology.

Research aims :

The main goal of the research is to discover the impact of applying block chain technology on improving the quality of the auditing process in Iraq. To achieve this goal, the following sub-objectives are branched out :

1. Learn about the use of block chain technology to provide appropriate audit evidence upon which the auditor relies in expressing his opinion on the fairness of the Iraqi financial statements.
2. Discovering the opportunities and challenges that the auditor can face using this technique.
3. Identify the impact of applying block chains in improving the quality of the audit process.

Research hypotheses:

In light of the aim of the study, the researcher can test the following research hypotheses:

- The first hypothesis (H01): "There are no significant differences in the respondents' perceptions regarding the characteristics and features of block chain technology".
- The second opportunity (H02: "There is no significant effect between the use of block chain technology on improving the quality of the auditing process in Iraq".

Research importance :

It is the necessity of learning about block chain systems and the advantages of using them, and identifying the opportunities and challenges associated with their application in accounting systems, and the necessity of directing the attention of business enterprises to the impact of the use of block chain technology on the quality of auditing, and identifying the impact of using block chains on providing appropriate and sufficient evidentiary evidence that supports the auditor in expressing his opinion in The fairness of the Iraqi financial statements.

Research Methodology :

To achieve the research objectives, the research will rely on two approaches: deductive and inductive. It uses the deductive approach in the stage of reviewing, studying and analyzing accounting thought through previous studies related to the subject of the study in the areas of application of block chains and their impact on the quality of auditing in Iraq.

The inductive approach is used to complete the applied aspect of the study to verify the validity of the hypotheses reached through the applied study .

Theoretical framework of block chains and audit quality :

First: The nature of block chains and their relationship to accounting systems :

Block chains are described as a distributed database that prevents tampering or change, even by operators

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of the two data stores in the nodes, of an ever-expanding base of data records, according to Fanning and Centers (2016). Because the block chain is growing all the time, it can be thought of as a public record of every transaction that is made. It is joined to the earlier blocks that make up the chain as a whole block. More significantly, the blocks are progressively and chronologically added to the chain. When a miner joins the network, they are given a copy of the block chain, which contains accurate and comprehensive information about the proper balances from the genesis block to the

Arafa (Tatiana and Mikko, 2021) defines it as a technology for storing and verifying transaction records that works by adding "blocks" of data to a ledger, which is maintained across a network of peer-to-peer or peer-to-peer computers.

Blockchain elements :

Block chains are an integrated system, with four basic elements in common, which are closely related to each other. Block chains do not exist in the absence of one of them, and these elements are as follows: (Mohammed, 2022)

1) Block: Such as the building unit of the chain, which is the set of operations to be performed within the chain, such as recording data, transferring funds, following up on a transaction, etc. The blocks are linked together by a code called a hash.
2) Hash: It is the DNA of each block. It is also called a digital signature, which is a small encrypted piece of data that is added to an electronic message such as email, and is produced through an algorithm within the block chains called the hash mechanism.
3) Information: It is the sub-process that takes place within a single block, and it also represents the "individual command" that takes place within the block.
4) Time fingerprint: This is the time at which any operation was performed within the chains

Types of Block Chains: (Swanson, 2015)

1) Public Blockchain: It is a distributed database that functions in accordance with the previously described principles and process. The term "permissionless blockchain" refers to the fact that accessing or seeing the contents of the blockchain does not require authorization. As a result, anybody can access the data and actions documented on it and take part in the verification process. confirming transactions, disseminating data, tying new blocks to the chain, or changing already-existing blocks.
2) Private block chains: It is a database that functions in accordance with the same principles and mechanism as the public block chain, but it is distinct from the latter in that it permits control over network access via a central authority (the founders) through guidelines, restrictions, and directives that have been decided upon by the founders. or the group of founders, and as a result, it is known as a permission blockchain since it only permits certain users to upload data to the chain and only members to view the data and access the chain. By doing this, the likelihood of hacking and other harmful assaults is decreased and the degree of trust among chain members is increased. According to the study, private blockchains are more akin to conventional accounting books since they may be used in financial institutions to streamline internal processes and give external stakeholders transparency and confidence.
3) Combining the public blockchain with the private blockchain: This kind of blockchain offers technical means of verifying user transactions. They incorporate the benefits of both public and private blockchains, including privacy, control, affordability, ease of use, and speed. The way they differ from private blockchains is that they are run by a group of authorized validators.

The researcher thinks that the combination of the public and private block chains could offer a better option than accounting books, particularly when it comes to identifying the individuals tasked with adding information to the blocks, the auditor's involvement in ongoing verification of the data and information added to the chain, and the ability to specify specific access levels for the data, so avoiding disclosure risks. The entire.

Characteristics of block chains:

The distinctive features of this technology, which the researcher attempts to review, are as follows: (Catalini and Gans, 2017)

1- Privacy: Because block chain technology is dispersed and decentralized, all transactions recorded in the chain must be approved by the entire network in the absence of a central authority.
2- Security: Block chains offer total security, which is one of their defining features. Because they are permanently registered on the block chain, the Reducing costs data stored on it are unchangeable

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once they are made. The consent of 51% of chain members is necessary for any modification process, which makes fraudulent and dishonest operations challenging.

3- By lowering the costs of recording information about business transactions, as well as the possibility of monitoring them in a timely manner and lowering the costs of verifying the validity of the information, the effective application of block chain technology in accounting systems makes them superior to traditional databases. automating procedures and getting rid of a lot of repetitive jobs that computers can complete more quickly and accurately than people.

4- Speed: It is distinguished by its rapid transaction processing, which saves time and effort, as well as its rapid access to information and records, information disclosure, control, operation tracking, and account auditing.

Second: Quality of auditing :

The concept of audit quality: Audit quality can be approached from three angles:

- The point of view of detecting errors and fraud: We find the definition of (Angelo) "It is an estimate by the market of the probability that the auditor will discover a deviation in the accounting system of the client being audited and report on that deviation" (Alexandra, 2022) .
- From the perspective of adherence to professional standards: The American Association of Certified Public Accountants (AICPA) explained in 1974 that audit quality is achieved through adherence to auditing standards and through the application of a set of considerations related to quality control in audit offices and adherence to the rules of ethics and conduct of the auditing profession (Djonny, Jeane ,2022).
- From the perspective of the ability to meet the needs of users of financial statements: Audit quality can be defined as satisfying the client's desires within the limits of professional controls, and the client is the one who judges the quality of the audit through the results he obtained and what he was waiting for and the difference between them, which is known as (the expectations gap). (Akifan Abi Rafdi, 2021).

The importance of audit quality: The importance of audit quality is (Michael, 2022)

- Ensure adherence to professional standards;
- Contributing to narrowing the expectations gap in auditing;
- Enhancing the detection of existing violations and errors;
- Reducing agency conflicts;
- Contributing to strengthening the concept of corporate governance;
- Good competitive performance;
- Increase confidence in the audit report and the credibility of the financial statements.

Third: The impact of applying block chains on audit quality:

The application of blockchain leads to quality through the following points:

1- Potential impact of blockchains on improving audit quality: The chain of information formed by blockchains is traceable and is restricted in chronological order, allowing for the possibility of reverse traceability of blocks. At the same time, only information that reaches consensus can be linked, providing: (Najoua, 2022)

High-quality audit evidence: Block chains make it possible to gather the information required for the external auditor to assess how accurately and fairly the financial statements portray the client's financial situation. The attributes of the audit evidence obtainable via block chains can be categorized into the following categories: (Pimente, 2020)

- Appropriateness: In order to obtain conviction, block chains assist the auditor in obtaining evidential evidence that is relevant, connected, and compatible with the audit aim with respect to the elements being examined.
- Efficiency: Since trust and security are thought to be the most crucial implementation strategies for block chains, the auditor can rely on the evidence he has collected using block chains to be reliable and trustworthy when forming his conclusions .
- Efficiency: Because of the interconnectedness and order of the transactions that are recorded on them, block chains facilitate the external auditor's ability to obtain the required volume of pertinent proof of credibility. Additionally, the external auditor can rely on thorough verification of every transaction rather than using the sampling method.
- Appropriate timing: Block chains enable fast transaction validity verification, allowing the auditor to quickly collect sufficient and pertinent information to render an opinion.

A. A number of nodes will verify accounting information during the data upload phase, making it impossible for a single node to carry out covert transactions.

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This means that audit risks will be minimized at the source in terms of audit evidence, audit effectiveness and efficiency will be enhanced, and the appropriate level of internal control will be attained. concurrently.

B. Data on the block chain is recorded in chronological order and broadcast to the entire network, which ensures the timeliness of the information, reduces the time-tampering behavior of the original system, and reduces the burden of auditing .
C. This can also significantly reduce the audit cost, as well as facilitate the implementation of audit procedures to reduce audit related risks.
D. The concept of smart contracts will be expanded to include smart audit procedures that help external auditors provide more efficient and effective audits.
E. Deploying intelligent audit procedures on distributed ledger blockchains will facilitate the implementation of audit procedures while providing near-real-time audit reports and greater transparency to stakeholders.
F. Since blockchain provides a platform for implementing intelligent audit procedures and near real-time audit reports, these new audit procedures have great potential to enhance audit quality by enabling auditors to implement audit procedures more efficiently and effectively and reduce risks.
G. This technology provides immutable records, and accounting policies and estimates can be permanently included in it, which reduces management's opportunism and its deliberate interference in the internal and external control systems and profit management. This serves the purposes of auditing, and would simplify and improve the auditor's work and make auditing work done immediately after The deal is completed**.**

1- **Opportunities and challenges facing the auditing profession in** light of the digital blockchain :

- It is clear that digital block chain technology adds new responsibilities and tasks to the auditor, such as: (Tanhao Chen 2022)
- Real-time auditing of transactions as someone on the chain and the need to verify digital assets.
- Emphasizing the extent to which the information on the chain is compatible with that existing in the physical world. Despite the advantages found in the digital block chain, there are some transactions that may have taken place on the chain but did not take place in the physical reality, such as inventory transactions. They may have taken place on the chain, but the inventory It has not been received yet, or it is a fraudulent transaction that did not result in an actual transaction. This imposes on the auditor the necessity of verifying the effectiveness of the internal control system to ensure obtaining appropriate assurance regarding transactions on the chain instead of testing the transactions directly .
- Conduct continuous and comprehensive auditing, as the digital block chain allows storing entire transactions on the digital block, and therefore the auditor will not need to request the data and wait for it to be presented to him, as it is completely available on the chain. He will also not need to take samples to examine them, as it allows him to conduct continuous review and thus will It saves the costs of collecting and evaluating evidence to verify the security and safety systems of the chain and the network on which the company deals, in order to reach the lowest percentage of errors and manipulations in the financial statements**..**

2- The role of the Auditing Standards Board towards the use of block chains in accounting systems:

The audit of financial and non-financial information will be impacted in the near future by a number of opportunities and problems presented by emerging audit technologies, including audit data analysis, artificial intelligence, process automation, and blockchain.

Examining the proposed statement, the Auditing Standards Board (ASB) has questioned whether the use of automated tools and techniques by both accountants and auditors makes an auditor's assessment of the sufficiency and appropriateness of audit evidence—which is primarily dependent on the nature of the auditor's audit procedures—appropriate. The ASB recommends By broadening the proposed statement's scope to include understanding the characteristics of the data that should be used as audit evidence, such as its suitability, reliability, and source reliability, as well as whether or not it supports the claims made in the financial data and the factors used to assess the data to be used as audit evidence, it was indicated that the audit evidence was sufficient. The

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assertion put out is that the emphasis should be shifted from measuring the volume of audit data to measuring its persuasiveness., because the auditor may find that the amount of audit evidence alone is insufficient given the array of automated tools, procedures, and information sources at their disposal in the audit environment. Acquiring relevant and adequate audit evidence now requires professional judgment and calls for using professional skepticism while gathering and assessing audit evidence. The suggested statement further stressed how an auditor's assessment of the data provided as audit evidence may be strengthened by using automated tools and procedures..

Field study:

Study population and study sample

The study population identified by the researcher consists of external auditors and faculty members.

Manage the survey list

The researcher managed and implemented the survey list through electronic distribution, to ensure obtaining an appropriate rate of responses. The percentage of responses reached (146) electronic responses, and this is evident in the following table **:**

Analyzed lists	Sample categories
84	External auditor
62	Faculty member
146	Total

Data collection method and survey list design

In collecting data and formulating the survey list, the researcher relied on two methods:

- The first method: personal interview: where the researcher conducted a number of personal interviews with some members of the study sample to get to know their opinions and discuss with them matters that were not clarified by the survey.
- The second method: The survey list: The questions of the survey list were formulated in a simple manner, and can be easily understood by those being investigated. The questions came to cover the theoretical aspects of this study, and the survey list includes:

✓ Personal data about the person being investigated: This is to clarify the experience and qualifications of the person being investigated and determine the degree of reliance on his answer.

✓ A set of graded questions: The respondent chooses a five-point answer to answer, as a basis for using a five-point graded Likert scale consisting of five answers. Weights have been given to the graded questions as follows:

Strongly Disagree	not agree	neutral	OK	Strongly Agree
One degree	2 degrees	Three degrees	Four degrees	Five degrees

Statistical analysis of survey list items

First: The relative distribution of the personal data of the respondents:

In light of the responses obtained, the researcher was able to describe the items of the study sample, according to the following table:

Table (2) Description of the sample items

The ratio %	**Number of responses**	**The one who investigates them**	
%57	**84**	External auditor	**By job**
%43	**62**	Faculty member	
%100	**146**	Total	
%15	**21**	Less than 5 years	**According to years of experience**
%36	**53**	From 5 to less than 10 years	
%30	**44**	From 10 to less than 15 years	
%19	**28**	15 years and over	

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%100	**146**	Total	
%55	**81**	Bachelor's degree in Accounting	**According to academic qualification**
%3	**5**	Postgraduate Diploma in Accounting	
%15	**20**	Master in Accounting	
%27	**40**	Doctorate in Accounting	
%100	**146**	**Total**	

Second: Testing validity and reliability (internal consistency coefficient - Cronbach's Alpha):

1- Internal consistency coefficient for the survey list:

The internal consistency coefficient was used to determine the consistency of each question in the survey list with the section to which it belongs, in addition to the extent to which each axis relates to the overall score of the department to which it belongs, by calculating average correlation coefficients between each section question and the total score. For the section to which it belongs, this was done by using the (Pearson) correlation coefficient at a significance level (0.01), as shown in the following table:

Table 3: Internal consistency (correlation) coefficient for the survey list

Total survey	**The impact of the use of blockchains on audit quality**	**Characteristics of block chains**	Average axes
****0.752**	****0.787**	**1**	Advantages and characteristics of block chains
0.000	**0.000**		
****858**	**1**		The impact of the use of blockchains on audit quality
0.000			
1			Total survey

**** It indicates the significance of the correlation coefficient at the level of significance (0.05).**

Source: From the results of the SPSS program outputs

It becomes clear to the researcher, through the results of the previous table, the validity, consistency, and correlation of all items of the survey list, as confirmed by the values of the correlation coefficients, all of which were significant at the level .(0.05)

1- Degree of reliability and validity (Cronbach's Alpha) for the survey list as a whole:

The degree of reliability and validity of the survey list as a whole can be measured as it represents the tool used to measure and analyze the results, using the Cronbach's alpha coefficient, which is shown in the following table:

Table (4) Degree of reliability and validity of the survey list

Self-honesty coefficient	**Alpha Cronbach**	**Number of questions**	Inspection list statements
0.953	**0.910**	**8**	Advantages and characteristics of block chains
0.948	**0.900**	**8**	The impact of block chains on audit quality
0.950	**0.905**	**16**	Total survey as a whole

It is clear from the previous table that the reliability coefficient (Cronbach Alpha) for each of the study variables is greater than (0.70), which indicates the stability of the statements for each of these variables.

Through the reliability coefficient (Alpha Cronbach), the researcher can arrive at the self-honesty coefficient for each variable, as: the self-honesty coefficient = the square root of the reliability coefficient

It is clear to the researcher from the previous table that the self-honesty coefficient for each of the study variables is greater than (0.70), which indicates the truthfulness of the statements that make up each of these variables.

Fourth: Statistical analysis of hypotheses

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1- Testing the first hypothesis:

The validity of the first hypothesis (H01), which is "There are no significant differences in the respondents' perceptions regarding the characteristics and features of block chain technology," is tested as follows:

✓ Descriptive analysis of the first hypothesis:

The researcher reviews the results of describing opinions on questions related to the first hypothesis through statistical measures (frequency, percentages, arithmetic mean, standard deviation, and relative importance).

Table (6) Descriptive statistics on the advantages and characteristics of using blockchains

Relative importance	standard deviation	Arithmetic mean	Degree of approval					Frequency	questions
			Strongly Disagree	not agree	neutral	OK	Strongly Agree		
8	0.800	4.30	0	9	4	67	66	ك	The reliance of digital block chain technology on the encryption system to record transactions makes it impossible to modify the recorded data without the consent of the other registered parties, which provides greater transparency and security.
			0	6.2	2.7	45.9	45.2	%	
7	0.808	4.34	0	9	4	62	71	ك	Digital Blockchain Technology is characterized by its ability to close gaps and weaknesses in internal control, which prevents cases of intentional manipulation from occurring.
			0	6.2	2.7	42.5	48.6	%	
6	0.713	4.43	0	6	1	63	76	ك	Digital blockchain technology helps provide information in a timely manner
			0	4.1	0.7	43.2	52.1	%	
3	0.632	4.56	0	2	5	48	91	ك	Digital blockchain technology helps in the unified classification of information, allowing users to understand the information and make timely analyzes and comparisons.
			0	1.4	3.4	32.9	62.3	%	
1	0.615	4.66	0	3	2	37	104	ك	Digital blockchain technology relies on immutability, as no participant can tamper with a transaction once someone records it in a shared ledger.
			0	2.1	1.4	25.3	71.2	%	
2	0.642	4.57	0	3	3	48	92	ك	Digital blockchain technology relies on decentralization to create a highly secure underlying software system that is almost impossible to tamper with.
			0	2.1	2.1	32.9	63	%	
4	0.666	4.53	1	2	2	55	86	ك	Blockchain technology helps replace the double-entry accounting method, facilitating and accelerating the codification process.
			0.7	1.4	1.4	37.7	58.9	%	

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5	**0.624**	**4.52**	**0**	**2**	**4**	**56**	**84**	**ك**	Digital block chain technology relies on a digital fingerprint that is difficult to imitate or hack, and therefore the security of accounting information is difficult to penetrate.
			0	**1.4**	**2.7**	**38.4**	**57.5**	**%**	
	0.495	**4.48**	**Total**						

Source: From the results of the SPSS program outputs

It is noted from the previous table that:

- The average of all statements is greater than (3). This indicates that the sample members agreed unanimously on the characteristics and advantages of using block chains. It is also noted that the standard deviation of all statements is less than one - and this indicates low dispersion in the sample's responses to these statements.
- The trends of the study sample showed a general trend toward approval of the characteristics and advantages of using block chains, with an arithmetic average of (4.48), and one of the most important statements was: Digital block chain technology relies on immutability, as no participant can tamper with a transaction merely by Someone registers it in the joint ledger.
- The least approved statements from the study sample are: The reliance of digital block chain technology on the encryption system in recording transactions makes it impossible to modify the recorded data without the approval of the rest of the registered parties, which provides more transparency and security

Results of the first hypothesis test:

The researcher reviews the results of testing the first hypothesis (H01), which states, "There are no significant differences in the respondents' perceptions regarding the characteristics and advantages of block chain technology," as follows:

1- Testing the hypothesis at the sample level:

This hypothesis was tested by applying the (K2) test at the sample level, the results of which appeared in the following table:

Table No. (7): Results of the (CA2) test regarding the characteristics and advantages of block chain technology at the sample level

Asymp.Sig.	DF	χ^2	statement
0.000	**3**	**98.986**	The reliance of digital block chain technology on the encryption system to record transactions makes it impossible to modify the recorded data without the consent of the other registered parties, which provides greater transparency and security.
0.000	**3**	**100.082**	Digital blockchain technology is characterized by its ability to close internal control loopholes and weaknesses, preventing cases of intentional manipulation from occurring.
0.000	**3**	**122.000**	Digital blockchain technology helps provide information in a timely manner.
0.000	**3**	**144.795**	Digital blockchain technology helps in the unified classification of information, allowing users to understand the information and make timely analyzes and comparisons.
0.000	**3**	**188.192**	Digital blockchain technology relies on immutability, as no participant can tamper with a transaction once someone records it in a shared ledger.
0.000	**3**	**149.507**	Digital blockchain technology relies on decentralization to create a highly secure underlying software system that is almost impossible to tamper with.
0.000	**4**	**211.192**	Blockchain technology helps replace the double-entry accounting method, facilitating and accelerating the codification process.
0.000	**3**	**133.781**	Digital block chain technology relies on a digital fingerprint that is difficult to imitate or hack, and therefore the security of accounting information is difficult to penetrate.

Statistically significant at a significance level of 0.05

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Source: From the results of the SPSS program outputs

Since the level of significance is less than (0.05), the null hypothesis is rejected and the alternative hypothesis is accepted. This means, "There are significant differences in the perceptions of the respondents regarding the characteristics and features of block chain technology." This means that there is agreement among the sample as a whole on the characteristics and advantages of digital block chains.

1. Testing the second hypothesis:

The validity of the second hypothesis (H02), which is "There is no significant effect between the use of block chain technology on improving the quality of the audit process," is tested as follows:

- Descriptive analysis of the second hypothesis:

The researcher reviews the results of describing opinions on questions related to the second hypothesis through statistical measures (frequency, percentages, arithmetic mean, standard deviation, and relative importance).

Table No. (8) Descriptive statistics on the impact of using block chains on improving the quality of the audit process

Relative importance	standard deviation	Arithmetic mean	Degree of approval					Frequency	questions
			Strongly Disagree	not agree	neutral	OK	Strongly Agree		
5	0.742	4.21	0	7	7	81	51	ك	Digital blockchains provide transparency and privacy of data at the same time, which increases objectivity when the auditor relies on the data.
			0	4.8	4.8	55.5	34.9	%	
1	0.642	4.57	0	3	3	48	92	ك	The use of block chains provides proof of relative importance for the element under audit, which increases the degree of convincing the auditor
			0	2.1	2.1	32.9	63	%	
4	0.633	4.45	0	3	2	67	74	ك	Decentralization in digital blockchains increases the speed of access to data and the ease of retrieval, which facilitates the work of the auditor
			0	2.1	1.4	45.9	50.7	%	
8	0.782	4.21	0	7	6	82	51	ك	The possibility of conducting continuous audits in light of the application of digital blockchain technology, as a result of providing real-time data
			0	4.8	4.1	56.16	34.9	%	
3	0.697	4.48	1	3	2	59	81	ك	Digital blockchains make it easier for the auditor to plan audit procedures
			0.7	2.1	1.4	40.4	55.5	%	
5	0.658	4.39	0	4	2	73	67	ك	Under digital blockchains, there is no need for management reports, because the auditor and management are members of the network, which contributes to the independence of the auditor.
			0	2.7	1.4	50	45.9	%	

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6	**0.718**	**4.39**	**1**	**3**	**5**	**66**	**71**	**ك**	Block chain technology helps provide financial and non-financial information in a timely, reliable and error-free manner, as it is considered safe and cannot be tampered with or falsified due to the technological structure of the network, and accordingly the quality of data that the auditor relies on in the audit process.
			0.7	**2.1**	**3.4**	**45.2**	**48.6**	**%**	
2	**0.634**	**4.54**	**0**	**3**	**2**	**54**	**87**	**ك**	Block chains help enhance the efficiency of internal control and, consequently, the quality of auditing.
			0	**2.1**	**1.4**	**37**	**59.6**	**%**	
	0.499	**4.40**	**Total**						

Source: From the results of the SPSS program outputs

It is noted from the previous table that:

- The average of all statements is greater than (3). This indicates that the sample agreed unanimously on the importance of using block chains on the quality of the auditing process. It is also noted that the standard deviation of all statements is less than one - and this indicates low dispersion in the sample's responses to these statements.
- The trends of the study sample items showed a general trend towards agreement on the importance of using block chains on the quality of the audit process, with an arithmetic average of (4.40), and one of the most important statements was: The use of block chains leads to providing proof of relative importance for the element in question. Auditing, which increases the degree of convincing the auditor.
- The least approved statement of the study sample is: the possibility of conducting continuous audits in light of the application of digital block chain technology, as a result of providing data in real time..
- Results of the second hypothesis test:

The researcher reviews the results of testing the second hypothesis, which states, "There is no significant effect between the use of block chain technology on improving the quality of the audit process," as follows:

This hypothesis was tested by applying the (K2) test at the sample level, the results of which appeared in the following table:

Table No. (9): Results of the (CA2) test regarding the impact of using block chain technology on improving the quality of the audit process

Asymp.Sig.	DF	χ^2	statement
0.000	**3**	**107.699**	Digital blockchains provide transparency and privacy of data at the same time, which increases objectivity when the auditor relies on the data.
0.000	**3**	**149.507**	The use of block chains provides proof of relative importance for the element under audit, which increases the degree of convincing the auditor.
0.000	**3**	**127.370**	Decentralization in digital blockchains increases the speed of access to data and the ease of retrieval, which facilitates the work of the auditor.
0.000	**3**	**107.699**	The possibility of conducting continuous audits in light of the application of digital blockchain technology, as a result of providing real-time data.
0.000	**4**	**198.384**	Digital blockchains make it easier for the auditor to plan audit procedures.
0.000	**3**	**123.534**	Under digital blockchains, there is no need for management reports, because the auditor and management are members of the network, which contributes to the independence of the auditor.

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0.000	**4**	**177.014**	Block chain technology helps provide financial and non-financial information in a timely, reliable and error-free manner, as it is considered safe and cannot be tampered with or falsified due to the technological structure of the network, and accordingly the quality of data that the auditor relies on in the audit process.
0.000	**3**	**141.616**	Block chains help enhance the efficiency of internal control and, consequently, the quality of auditing.

Statistically significant at a significance level of 0.05

Source: From the results of the SPSS program outputs

Since the level of significance is less than (0.05), the null hypothesis is rejected and the alternative hypothesis is accepted. This means, "There is a significant effect between the use of block chain technology on improving the quality of the audit process." This means that there is agreement from the sample as a whole on the importance of using block chain technology on the quality of the audit process.

Results and recommendations:

First: the results of the study

1- There is agreement among the respondents on the advantages and characteristics of using block chain technology, as it is considered a system based on encryption in recording transactions according to double entry, and it has to facilitate and accelerate the registration process. The digital block chain system also depends on immutability, as no participant can tamper with a transaction simply by making it. Someone registers it in the shared ledger, in addition to the reliance of block chains on decentralization to create a very secure basic software system that is almost impossible to manipulate, in addition to their reliance on a digital fingerprint that is difficult to imitate or hack, and therefore the security of accounting information is difficult to penetrate .

2- There is a significant impact between the use of block chain technology on improving the quality of the audit process, as digital block chains provide transparency and privacy of data, which increases objectivity when the auditor relies on the data, as well as providing proof of relative importance to the element under audit, which increases the degree of convincing the auditor. , as well as the speed of access to data and ease of retrieval by the auditor, in addition to the possibility of conducting continuous auditing, and finally supporting the independence of the auditor, as under digital blockchains there is no need for management reports, because the auditor and management are members of the network.

Second: Recommendations

In light of the results reached in this study, the most important recommendations that the researcher deems necessary can be presented, and they can be benefited from as follows:

1. The necessity of adopting blockchain chains by large sectors such as banks and Iraqi government agencies to develop business.
2. Training auditors on the possibility of relying on digital block chains when carrying out the audit process.
3. The need to radically develop curricula to address modern accounting systems such as digital block chains to support auditing operations.

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