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THE IMPACT OF USING BLOCK CHAIN TECHNOLOGY ON ACCOUNTING INFORMATION SYSTEMS: A FIELD STUDY IN LISTED JOINT STOCK COMPANIES IN THE IRAQI STOCK EXCHANGE

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Abstract:

The study aimed to introduce the concept of block chain technology, its features, objectives, and characteristics. It also aimed to define the accounting information system, its components, characteristics, and functions. The study examined the relationship and impact between the use of block chain technology and the accounting information system. To achieve its objectives, the study used a questionnaire as a tool to gather the necessary information from 47 Iraqi companies listed in the Iraqi stock market. Given the nature of the study and its objectives, the researcher used a descriptive analytical approach. The study found a statistically significant strong positive relationship between block chain technology and the accounting information system in the listed companies in the Iraqi stock market. It also found a statistically significant strong positive relationship between the dimensions of block chain technology usage and the accounting information system in the listed companies in the Iraqi stock market, with a correlation coefficient of 0.883. The study recommended designing an accounting system that is flexible enough to accommodate all the changes that occur with block chain technology transactions. It also recommended the availability of qualified individuals who possess the scientific and practical knowledge and are capable of performing accounting work in the context of block chain technology

Keywords: Blockchain technology, accounting system, Iraqi financial market

INTRODUCTION:

Accounting has kept pace with modernity throughout history, with each era adopting the latest technological advancements. Traditional accounting relied on paper-based documents and ledgers to document, record, and process financial transactions, which was suitable for the needs of that time. However, with the discovery of the computer and its widespread use, and faced with the large amount of financial data that requires higher processing capabilities,(Ping&Xuefeng,2011).The growing global interest in the new generation of technology called Block chain, as a next-generation for frictionless transactions, is being reflected at the level of countries, governments, and individuals(Hardjono,2018),Block chain technology is a brilliant innovation that, according to the World Economic Forum, will become the beating heart of the global financial system. It is the latest development in the world today in the sector of recording financial, commercial, and service transactions in a technological way that cannot be tampered with, in addition to the high speed at which it can be done in a short period of time, (Al-Andalusi, 2017) When we talk about the accounting information system in any economic institution, we find it among the most important information systems in institutions due to its advantages over other systems. This is due to the financial role that the accounting information system guarantees, as it is responsible for determining the financial position. Therefore, a part of the performance of institutions is affected by the type of accounting information system they use. (Nour El-Din and Islam, 2019).

1.1 Study Problem

Many economic institutions lack efficient management and transparent financial practices, and there is a pressing need for innovative methods of investment that are compatible with the financial revolution to keep up with economic, financial, and social development. In this regard, the financial revolution will provide great opportunities for communities to achieve high rates of economic, social, and humanitarian development in general, and will also provide more transparency and efficiency in financial operations. The expansion of blockchain

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trading and mining urges us to rethink the way our countries develop and leverage it in a positive and powerful way, and to contribute to creating developmental and social opportunities.

1.2 Importance of Study.

The importance of this study lies in examining and shedding light on the following points:

1. The trend towards the world of uncertain financial technology, or fintech, is a term that encompasses both the technological and financial aspects, resulting in a field that focuses on financial transactions through the use and exploitation of everything that modern technology has produced. (Abdul Rahim, 2018)
2. The growing interest in block chain as a modern global technology, in light of the pursuit of applying accounting systems in economic institutions and increasing their effectiveness through its effective technology in disclosure, transparency, and achieving effective supervision of all parties in the institutions, by harnessing technological innovations and effective approaches to governance, finance, and accounting system.
3. Understanding the reality of this technology, especially since its implications and applications are an industrial duty, with each meaning having its own effects, as it accelerates its entry into application in financial and economic institutions.
4. The increasing demands for accounting and accounting system that ensure transparency, disclosure, accountability, and identifying responsibility, and ensuring that financial administrations comply with financial laws, standards, and applicable systems, as well as codes of conduct and ethics, contributes to safeguarding the institution and its assets. (Mohammed, 2016)

1.3 Hypotheses of the study:

Main Hypothesis: There is no statistically significant effect between using blockchain technology and the accounting information system of listed companies in the Iraq Stock Exchange.

Sub-Hypotheses:

- There is a statistically significant effect at a significance level of ($\alpha \leq 0.05$) for centrality on the accounting information system of listed companies in the Iraq Stock Exchange.
- There is a statistically significant effect at a significance level of ($\alpha \leq 0.05$) for transparency on the accounting information system of listed companies in the Iraq Stock Exchange.
- There is a statistically significant effect at a significance level of ($\alpha \leq 0.05$) for traceability on the accounting information system of listed companies in the Iraq Stock Exchange.

The second hypothesis:

There is no statistically significant effect between the use of block chain technology and the accounting information system of listed companies in the Iraq Stock Exchange that can be attributed to variables such as gender, educational qualification, scientific specialization, job title, and company activity.

2.1 Block chain technology:

"Block chain technology is defined as a decentralized software mechanism that allows tracking and recording of assets and transactions without the presence of a central trust authority such as a bank. Block chain networks establish proof of ownership using unique digital signatures that rely on public encryption keys known to everyone on the network and private keys known only to the owner. Complex algorithms lead to consensus among users, ensuring the impossibility of tampering with transaction data after verification, which reduces the risk of fraud."(Cognizant, 2019), "(Al-Najjar, 2019: 46) defined it as a decentralized ledger of all transactions between each party in the network, where participants can confirm transactions based on the chain of blocks without the need for a central authority to authenticate the data." "(Hewavitharana, et al, 2019) defined it as three main components - blocks, ledger, and networks, where specific transactions are stored in the ledger over a certain period of time in a place called a block, and these blocks can vary in their goals, size, and capabilities.

"Based on the above, the researcher defines it as a decentralized digital financial and administrative system capable of performing multiple tasks while providing significant time, effort, and cost savings without the need for an intermediary.

2.2 Applications of block chain technology:

The applications of block chain are diverse and extend to various fields beyond simply transferring money, whether it is digital or traditional. This ca.n be illustrated in several points. (Khalifa, 2018)

1. One of the functions of block chain is the ability for individuals to register their assets, whatever those assets may be, whether real estate, jewelry and gemstones, personal property such as cars, or patents and intellectual property rights, so that individuals can later sell them through the block chain system or conduct transactions on them.
2. Transaction documentation: This refers to any transaction, whether it is personal between individuals or within a company, government or non-governmental organization. Block chain serves

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as an open and distributed digital ledger that allows anyone to enter all data on it, whether it is government procedures, production line tracking in a factory, registering sales and purchases, transferring ownership, monitoring customer service, and documenting all transactions between any two individuals in any field. This enables the detection of loopholes, fighting corruption, and monitoring quality.

3. Mediation services: The block chain performs the role of the intermediary present during service delivery, replacing banks in transferring money, real estate agents in registering properties, traffic departments in registering cars, and brokers in buying and selling**.**

2.3 Block chain Technical Features

The block chain technology has unique characteristics that may revolutionize many sectors in the financial services industry, including individual investor payments, investment institutions, capital market services, stocks, commercial financing, and insurance. The impact of this technology is not limited to the huge savings that can be achieved, but also includes significant gains in transparency that could have a very positive effect from an auditing and regulatory perspective (Abdul Nabi, 2017). The characteristics of block chain technology include the following (Ahmed, 2018)

1. Block chain is a decentralized distributed technology: It represents a new and distinctive alternative to traditional cash-based transaction methods (Edgile, 2018). It is characterized by its decentralization, governed by a group of people who share the same interests and goals (Shermin, 2017), while achieving a high level of security for the transfer process, in the face of attempts at fraud or manipulation.
2. Block chain technology is an open-source software, and one of its advantages is that it enters many fields at low prices, which eliminates the monopoly of some dominant companies.
3. Block chain technology is immutable and unchangeable, which helps to preserve rights and obligations, particularly in voting processes and in registering and transferring ownership.
4. Block chain technology is characterized by transparency and disclosure: to enable everyone to access information that is intended to be transparent. However, this feature may pose an ethical problem in public networks as it could reveal personal information about individuals.
5. Efficiency: in terms of speed, there is faster data transfer compared to current systems, as well as lower costs and no need for routine work.
6. Better Security: Although security is a fundamental issue in most modern technologies, block chain provides better security because it uses an infrastructure that is suitable for general use and protects against malicious attempts to change data. (Atlam & Wills, 2019)
7. Automation: By hosting smart contracts, block chain technology accommodates smart contracts by embedding programming code. Once the predetermined conditions are met, the next step in the transaction or process is executed automatically. Smart contracts reduce human intervention as well as reliance on third parties to verify contract conditions. For example, once the customer submits all necessary documents to file a claim, the claim can be settled and paid automatically. Self-executing smart contracts enable the transfer of ownership timing from one party to another in a decentralized environment. (Al-Qaisi, 2021).

2.4 Challenges of using block chain technology:

Most studies agree on the nature and characteristics of the challenges facing individuals, countries, and companies when using block chain technology. The following are the most prominent ones. (Singh & others, 2021)**:**

1. Lack of awareness and perception in the uses of technology.
2. Inflexible organizational structures.
3. High costs compared to the benefits of governance implementation: the costs of replacing current systems with future systems are high, including the loss of current systems, the high prices of future systems, as well as the costs of maintenance, monitoring, and training employees to understand and operate them
4. Security and privacy.
5. Generated decentralization of dispersion.
6. Consensus and agreement in block building.

And Amal (2021) added,

7. Password loss and technology handling problems: The most important element in protecting personal property in current systems is the owner, as losing a card or password does not mean losing one's belongings and money, as the owner can stop operations by reporting the loss in person. However, in the overall tech economy, especially in this technology, losing a password means losing property, especially since it is based on a decentralized technology, and referring to a

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responsible authority becomes difficult. Additionally, the problem of ignorance of technological matters makes it difficult to quickly introduce these technologies to societies, as they may cause severe harm due to misuse.

8. Legal Issues and Privacy Concerns: One of the challenges currently facing lawyers is the difficulty of keeping up with the intricacies of technology, as any legislation will inevitably be incomplete without a comprehensive and informed understanding of the subject. This creates a greater demand for technology lawyers, who are currently few in number, while technology continues to rapidly develop and introduce new products. This presents a significant challenge for lawyers and the technology community alike, and highlights the need for legal institutions to keep pace with these developments and protect all parties by regulating these processes to ensure justice for all**.**

2.5 Block chain Technology Mechanism:

Block chain is a complex technology subject to a highly precise and immune encryption system, and each transaction is carried out through successive and complementary stages, which can be summarized as follows: (Malk, 2021)

1. Individuals deal with the digital block chain using a pair of keys, a private key and a public key, where the former is used to sign their own transactions, while the latter is used for transactions on the network.
2. Everyone can access all transactions within the block chain, and therefore know each other's assets, without knowing their real identities, as this technology allows the use of aliases.
3. When a transaction is made between two parties, such as a money transfer, it is shown to everyone whether each of them is able to conduct the transaction. If the transaction is valid, the participants on the block chain confirm it and the chain publishes that sequence. In the opposite case, no one will respond to the transaction.
4. All transactions that have been confirmed and verified in the previous step are collected and arranged within a time frame agreed upon in a block that carries its own timestamp, and this is called mining.
5. The devices represented in the contract verify the accuracy of the information contained in the block for the previous step, as well as verifying its hash and how it is related to the hash of the previous block, and if all the data is correct, the new block is attached to the chain.

3.1 Definition of Accounting Information System:

Accounting Information System (AIS) is defined by Hamoudi (2016) as a subsystem within an economic entity that consists of several interconnected and coordinated subsystems that work together to provide historical, current, and future financial and non-financial information to all parties interested in the economic entity, in order to achieve its objectives. Meanwhile, Naaman (2017) defines AIS as a comprehensive system of information systems that consists of elements (whether human or material) that process data and transform it into information. AIS is one of the sub-systems that make up the overall system of the organization. AIS is composed of a set of subsystems that collect, process, store, and deliver information to the relevant parties to assist them in making timely decisions in performing their functions. It is a part of the management system of the enterprise, consisting of both material and immaterial components that operate to process data and transform it into information in order to meet the needs of users of financial statements (Al-Sayed et al., 2019)

3.2 Objectives of accounting information system:

The objectives of an accounting information system are as follows (Al-Mawla, 2020)

1. Producing the necessary reports to achieve the goals of the accounting unit, as reports of different types represent the final results of the accounting information system.
2. Providing accuracy in data and reports in terms of preparation and results. The efficiency of the accounting information system is related to the quality of the reports it produces, and the quality standard of these reports is based on the accuracy of the included data. Accuracy in reports is ensured through specific internal review steps that include verification of the accuracy of journal entries, migration, and summarization of various processes.
3. Providing reports in a timely manner. Timely access to reports is important for the management of the accounting unit because it helps to make

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decisions correctly without fear of incurring unforeseen risks.
4. Providing the necessary internal control measures to protect the assets of the accounting unit and improve its performance efficiency.
5. Providing sufficient information and data, in terms of quality, quantity, and timing, to all beneficiaries from different categories.
6. Providing integrated and organized records of financial transactions and operations at the lowest possible cost. It also provides means of control and monitoring of accounting and financial information and data, assets and property of the entity.
7. Identifying existing financial and accounting problems and preparing future plans, expressing them digitally.

3.3 Functions of Accounting Information Systems:

The functions of accounting information systems can be summarized as follows (Nour El-Din & Islam, 2019):

1. Data aggregation: This function is achieved through the input stage and involves several steps such as recording data, verifying its accuracy and completeness, and may involve external or internal data or feedback.
2. Data processing: This function is achieved through the processing stage and usually involves several steps and procedures such as classification, copying, sorting, indexing, summarizing, and comparing.
3. Data management: This function includes storing, saving, continuously updating and modifying data to reflect the latest economic events, operations, or decisions, as well as retrieving previously stored data for use and reporting.
4. Data control: The purpose of data control is to protect assets from loss, ensure the completeness and accuracy of data, and ensure the proper processing of data. Various procedures and methods are used within the accounting information system to control data, such as examination and testing of inputs, reviewing stored data, and using passwords.
5. Provision of information: This is the final function of the accounting information system and includes multiple steps such as interpretation, reporting, and delivery of information to users. It complements the input and processing functions of the system.

3.4 The relationship between block chain technology and accounting information systems

1. Block chain technology has many features and functions that make it a capable administrative and financial system, capable of performing several real functions, while providing more time and effort with minimal task cost, monitoring all processes and ensuring their source. In addition to combating cheating or manipulation practices. These features include: • Combatting killer routines: The block chain system helps government circles achieve efficiency, as all individual transactions are clear within the chain, and if there is a need to verify some information, certificates, or documents, they can be easily accessed, which helps save time and eliminate routine and bureaucracy. (Khalifa, 2018).
2. Ensuring quality: The block chain system allows tracking all steps related to the transaction, which ultimately helps ensure the best possible service quality. The block chain can be relied on to monitor the quality of manufacturing processes, evaluate the quality of final products, and ensure they meet global standards before being traded in the markets. (Ismail, 2021).
3. Block chain technology contributes to linking tools, stages, and tasks of the accounting information system, so that joint work can be summarized with flexibility and high coherence. The urgency to digitally transform companies has become more pressing than ever before. This is primarily due to the rapid development in the use of information technology tools and means in all aspects of life, whether related to transactions with the government sector or the private sector, or related to individuals. Therefore, there is clear pressure from all segments of society on institutions, entities, and companies to improve their services and make them available through all digital channels. (Abu Samra, 2019).

The importance of implementing the entire block chain in the accounting system can be identified as follows, according to Al-Bawab (2021)

- **Speed**: Companies are moving towards digital transformation and leveraging artificial intelligence, block chain, and smart applications to facilitate and accelerate financial processes. This is particularly important since customers prefer digital services in order to enhance the level of

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service provided by the company and increase customer demand.

The researcher indicates that block chain technology, through its: decentralization feature, contributes to reducing the time required for financial transactions, which leads to reducing pressure on top management and obtaining accurate operations.

- The main benefits of digital transformation and block chain technology for businesses include streamlining transactions, increasing transparency, reducing administrative complexities, improving internal relationships, and changing the image of the organization.
- Digital transformation and block chain technology can help businesses reduce transaction times when modifying products and communication strategies to better serve customers. This requires companies to continue developing to keep up with increasing customer demands, technological innovations, and financial services solutions.
- Increased transparency is a result of having electronic oversight and routine monitoring of all services provided. Electronic management reduces the expense of tracking administrative processes and reduces decision-making obstacles by creating a database connected to decision-making centers and using information technology to support and build a positive corporate culture among all employees.
- Electronic management minimizes administrative processes and procedures, saving effort and time by continuously providing services to applicants through the internet, especially since this feature is not restricted by time or place.

Block chain technology helps businesses reassess hierarchical relationships by redistributing competencies and raising the degree of horizontal and vertical coordination between various administrative units. This is accomplished by putting private and shared information in companies to exchange information properly without following procedures. This increases efficiency and the ability to process, store, communicate quickly, be flexible, and overcome central decision-making obstacles.

- Lastly, digital transformation and block chain technology can change the image of a company from a traditional one that requires a large number of workers, constructs huge buildings, and utilizes complex organizational structures to an electronic image that requires little work without geographic locations or buildings.

The researcher also adds that block chain technology prevents financial and administrative corruption. The block chain system does not allow for modifications or cancellations, and all transactions made within the chain are recorded step by step with timestamps. In case of tampering or forgery, the chain does not accept the transaction to be entered again, which helps in eliminating corruption.

Afield study:

Based on the nature of the study and the objectives that it seeks to achieve, the researcher used the descriptive-analytical method. The study population consisted of 47 joint-stock companies listed on the Iraq Stock Exchange.

Study Tool:

A questionnaire was developed on "The Impact of Using Block chain Technology on the Accounting Information System: A Field Study in Joint-Stock Companies Listed on the Iraq Stock Exchange."

Table 1: Validity and Reliability of the Study Tool (Questionnaire)

1	2	3	4	5	Likert scale
Strongly Disagree	Strongly Disagree	neutral	Agree	Strongly Agree	Level of agreement.
less than 1.80	1.80 to 2.59	2.60 to 3.39	4019 to 4030	Bigger 4020	Arithmetic mean
less than 36%	36 %to 51.9%	52 %to 67.9%	68 % to %83.9	bigger 84%	relative weight

The researcher chose a 1-5 Likert scale for the responses, where the closer the answer is to 5, the higher the agreement with the statement in question. Each point on the scale carries a relative weight of 20%

Internal Consistency Results:

Table (2) shows the correlation coefficient between each item of the "Block chain Technology" axis and the total score of the domain. The correlation coefficients indicated are significant at a significance level of 0.05 ≥α, indicating that the domain is valid for measurement.

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Table 2: Correlation Coefficients between Each Item of the "Block chain Technology" Axis and the Total Score of the Axis.

Block chain Technology.					
probability (Sig.) value	**Pearson coefficient to link**	**phrase**	**probability value (Sig.)**	**Pearson coefficient to link**	**Phrase**
		Transparency			**decentralization**
0.000	0.804**	Transparency increases the degree of flexibility in the use of information technology.	0.000	0.654**	Decentralization speeds up access to information
0.000	0.887**	Transparency enhances the reliability of data for all parties.	0.000	0.701**	Decentralization enables the retrieval of stored information.
0.000	0.942**	Transparency contributes to ensuring that procedures are implemented correctly.	0.000	0.684**	Decentralization eliminates individual weaknesses from using centralized systems.
0.000	0.747**	Transparency enables all parties to see the changes	0.000	0.773**	Decentralization facilitates cooperation between different entities.
0.000	0.815**	Transparency enhances access to information on activities.			

Tracking		
Tracking increases the accuracy of information related to the shipping process.	0.000	0.817**
Tracking can ensure the safety of operations.	0.000	0.824**
Tracking reduces the risks associated with fraudulent activities.	0.000	0.901**
Tracking enables the tracing of transportation methods.	0.000	0.866**
All relevant parties share information related to the product to determine its quality.	0.000	0.864**

"The correlation is statistically significant at a significance level of 0.05≥α."

Table 3: Correlation coefficients between each item of the "Accounting Information Systems" axis and the total score of the axis.

	Accounting Information Systems (AIS)	**Pearson correlation coefficient**	**value possibility (.Sig)**
1	The accounting system can adapt its software to the rapidly evolving technological developments locally and globally.	0.858**	0.000

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2	Qualified individuals who have the scientific and practical ability to perform accounting work while utilizing modern technologies are available.	0.884**	0.000
3	Developing an electronic data operating system does not conflict with the main qualitative characteristics of accounting information (relevance and reliability).	0.674**	0.000
4	The use of electronic payment methods may lead to a disruption in the company's traditional payment system.	0.741**	0.000
5	Prioritizing the provision of modern and advanced protection for electronic accounting systems contributes to keeping up with commercial transactions.	0.904**	0.000
6	Continuous training of individuals contributes to keeping up with the developments that occur in economic transactions.	0.848**	0.000
7	Prioritizing the acquisition and development of physical components of accounting information systems leads to keeping up with changes in modern business transactions.	0.764**	0.000
8	Increased transactions may lead to the multiplicity and diversity of the company's financial operations, which requires developing information systems that align with these changes.	0.814**	0.000
9	It is essential to consider the developments of accounting information systems, the foundations, concepts, principles, and standards that govern the accounting system	0.689**	0.000

Table (3) shows that all correlation coefficients in all dimensions of the survey are statistically significant at the 0.05 level of significance, thus all dimensions of the survey are considered valid for measurement.

Table 4 presents the correlation coefficients between the score of each dimension of Block chain technology and Accounting Information Systems, and the total score of the questionnaire.

		Pearson correlation coefficient	**(Sig.)**	
1.	First: Block chain technology	0.948**	0.000	1.
2.	Second: Accounting information systems	0.954**	0.000	2.

Resolution stability

:The researcher verified the stability of the study questionnaire through .(Cronbach's Alpha Coefficient The results were as shown in Table (5)

Table 5: Reliability statistics for measuring the stability of the resolution

	Cronbach's Alpha if Item Deleted	**Corrected Item-Total Correlation**	**Scale Variance if Item Deleted**	**Scale Mean if Item Deleted**
Decentralization	0.964	0.891	13.884	26.944
Transparency	0.953	0.832	12.842	27.792
Tracking	0.958	0.842	12.903	27.864
First: Blockchain technology	0.958	0.855	13.203	27.553
Second: Accounting information systems	0.971	0.983	13.741	28.121

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It was clear from the results shown in Table No. (5) that the value of Cronbach's alpha coefficient was high for the total axes of the questionnaire's blockchain technology, as it reached 0.983 using the Cronbach's alpha method, while the value of Cronbach's alpha coefficient was high for the total accounting information systems, 0.971.

Statistical treatments used in the study

The questionnaire was analyzed using the Statistical Package for the Social Sciences (SPSS) program.

Data analysis and testing of study hypotheses

The relative weight of the items of the domains/statistical description of the study sample according to the personal :data

Table No. 6 Description of the sample according to the variable (gender, educational qualification, scientific specialization, job title, type of company

Table 6

			Gender
male	Repetition	38	%81
female	Repetition	9	%19
diploma	Repetition	7	%15
Bachelor's	Repetition	32	%68
Postgraduate	Repetition	8	%17
Accounting	Repetition	16	%34
administration	Repetition	10	%21
Economy	Repetition	12	%26
other	Repetition	9	%19
Manager	Repetition	15	%11
agent	Repetition	9	%40
estimated	Repetition	6	%13
auditor	Repetition	10	%21
writer auditor	Repetition	7	%15
		Company activity	
services	Repetition	13	%28
commercial	Repetition	11	%23
Industrial	Repetition	23	%49

Analysis of the paragraphs of the questionnaire

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To analyze the items of the questionnaire, laboratory tests (one-sample T-test) were used to find out the average response scores. Grade 3 was considered the average, representing 60% on the study scale. (Ozen, Yaman, & Acar, 2012)

Table (7)

degree of impact	The arithmetic mean	The relative weight of the arithmetic mean
Very few	.1 - .1.00	less than 36%
Few	2.59 – 1.80	from 36-51.9%
Medium	2.60- 3.39	from 52% -67.9%
Big	4.19-3.40	from 68% -83.9%
Very big	4.20-5.00	from 84% -100%

Answer the study questions

What is the level of using Block chain technology among the joint-stock companies listed on the Iraq Stock Exchange?

What is the level of administrative accounting information systems in the joint-stock companies listed in the Iraq Stock Exchange?

Table 8: Arithmetic mean and relative weight, axes of block chain technology and accounting information systems.

Table No. (8)

Interlocutors	degree of impact	p-value	test value	relative weight	standard deviation	Arithmetic mean
First: Block chain technology as a whole	big	0.00	21.18	79.60	0.60	3.98
Second: Accounting information systems	big	0.00	19.23	78.80	0.64	3.94

Through Table (8), it is clear that the relative weight of the total axis of Block chain technology amounted to 79.6%, with an average of (3.98) and a standard deviation of (0.60), and that the relative weight of the total axis of accounting information systems amounted to 78.8%, with an average of (3.94) and a standard deviation of 0.64.

What is the relationship between the use of block chain technology and accounting information systems in the joint-stock companies listed on the Iraq Stock Exchange?

Table No. (9) shows that the correlation coefficient is equal to 0.877, and that the probability value (Sig.) is equal to 0.000, which is less than the level of significance 0.05 ≥ α, and this indicates that there is a strong and direct statistically significant relationship between block chain technology and accounting information systems in the listed joint-stock companies in the Iraq Stock Exchange

Table 9: The relationship Block chain technology in the accounting information systems in Iraqi companies listed on the Iraqi financial market

Table 9

Wondering	Pearson coefficient to link	probability value (Sig.)	indication
The relationship of using Block chain technology in the accounting information systems of the joint-stock companies listed in the Iraq Stock Exchange	***0.877**	**0.000**	**Statistically significant**

The correlation is statistically significant at the significance level 0.05 ≥ α *

:The first main hypothesis

There is no statistically significant effect between the use of block chain technology and the accounting information system of the joint-stock companies listed on the Iraq Stock Exchange

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- Table No. (10) shows that the correlation coefficient is equal to 0.883, and that the probability value (Sig.) is equal to 0.00, which is less than the level of significance 0.05 ≥ α, and this indicates that there is a strong statistically significant relationship between the dimensions of the use of block chain technology on the accounting information systems of companies The shareholding listed in the Iraq Stock Exchange, and accordingly we replace the null hypothesis with the alternative hypothesis which states that "there is a statistically significant effect between the use of block chain technology and the accounting information system of the shareholding companies listed in the Iraq Stock Exchange
- The multiple regression model shows that the accounting information system, which represents the dependent variable, is affected in a substantial and statistically significant way.

-The modified coefficient of determination was 0.780, which means that 78% of the change in the accounting information system is due to the influence of the independent variables (decentralization, transparency, tracking) and the remaining 22% is due to other factors affecting the accounting information system.

Table 10 Results of the multiple regression analysis test of the impact of the dimensions of using block chain technology on the accounting information systems of the joint-stock companies listed on the Iraq Stock Exchange

table (10)

dependent variable	the independent variable	regression coefficient ß		T	Sig.	Sig. indication	(R^2)	F	Sig. indication
Accounting information system	Block chain technology	fixed amount	.206	1.280	.202	0.000	0.780	215.1	.000
		Decentralization	.402	5.370	.000				
		Transparency	.350	4.442	.000				
		Tracking	.187	2.521	.013				

When increasing (decentralization) by one unit, it leads to an increase in the dependent variable (accounting information system) by (0.402).

When increasing (transparency) by one unit, it leads to an increase in the dependent variable (accounting information system) by (0.350).

When increasing (tracking) by one unit, it leads to increasing the dependent variable (accounting information system) by (0.187.)

- **The following sub-hypotheses branch out from it: - There is a statistically significant effect at the level of significance (α ≤ 0.05) of decentralization on the accounting information system of the joint-stock companies listed in the Iraq Stock Exchange**

-Table No. (11) shows that the correlation coefficient is equal to 0.791, and that the probability value (Sig.) is equal to 0.00, which is less than the level of significance 0.05 ≥ α, and this indicates the existence of a strong statistically significant relationship between decentralization and the accounting information system of the joint-stock companies listed on the stock exchange. Iraq Securities

- The multiple regression model shows that the accounting information system, which represents the dependent variable, is affected in a substantial and statistically significant way by the (decentralization) axis.

•The modified determination coefficient was 0.626, which means that 62.6% of the change in the accounting information system is due to the influence of the independent variable (decentralization) and the remaining 37.4% is due to other factors affecting the accounting information system.

Table 11 Results of the simple regression analysis test for the impact of decentralization on the accounting information system of the joint-stock companies listed on the Iraq Stock Exchange

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the independent variable	dependent variable	regression ß coefficient		Sig.	T	(R)	(R^2)	F	(R^2)	Sig.
Decentralization	Accounting information system	.359	fixed amount	.085	1.732	0.791	0.626	307.6	0.626	0.00
		.894	decentralization	.000	17.539					

- **There is a statistically significant effect at the level of significance (α ≤ 0.05) for transparency on the accounting information system of the joint-stock companies listed in the Iraq Stock Exchange.**

Table No. (12) shows that the correlation coefficient is equal to 0.777, and that the probability value (Sig.) is equal to 0.00, which is less than the significance level 0.05 ≥ α, and this indicates the existence of a strong statistically significant relationship between transparency and the accounting information system of the joint-stock companies listed in the Iraq market Securities.

The multiple regression model also shows that the accounting information system, which represents the dependent variable, is affected in a substantial and statistically significant way by the (transparency) axis.

The modified coefficient of determination was 0.603, which means that 60.3% of the change in the accounting information system is due to the influence of the independent variable (decentralization) and the remaining 39.7% is due to other factors affecting the accounting information system.

Table 12 Results of the simple regression analysis test for the effect of transparency on the accounting information system of the joint-stock companies listed on the Iraq Stock Exchange.

Table No. (13)

the independent variable	dependent variable	regression ß coefficient		T	Sig.	(R)	(R^2)	F	Sig.
Transparency	Accounting information system	.913	fixed amount	4.937	.000	0.777	0.603	279.4	0.000
		.767	Transparency	16.718	.000				

- **There is a statistically significant effect at the level of significance (α ≤ 0.05) of tracking on the accounting information system of the joint-stock companies listed in the Iraq Stock Exchange**

Table No. (13) shows that the correlation coefficient is equal to 0.832, and that the probability value (Sig.) is equal to 0.00, which is less than the significance level 0.05 ≥ α, and this indicates that there is a strong statistically significant relationship between tracking and the accounting information system of the joint-stock companies listed in the Iraq market Securities.

The multiple regression model shows that the accounting information system, which represents the dependent variable, is affected in a substantial and statistically significant way by the (healing) axis.

The modified coefficient of determination was 0.693, which means that 69.3% of the change in the accounting information system is due to the influence of the independent variable (tracking) and the remaining 30.7% is due to other factors affecting the accounting information system.

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Table 13 Results of the simple regression analysis test for the effect of tracking on the accounting information system of the joint-stock companies listed on the Iraq Stock Exchange.

the independent variable	dependent variable	regression ß coefficient		T	Sig.	(R)	(R^2)	F	Sig.
Transparency	Accounting information system	.758	fixed amount	4.749	.000	0.832	0.693	414.5	0.000
		.809	tracking	20.36	.000				

The second main hypothesis:
There is no statistically significant effect between the use of block chain technology and the accounting information system of the joint-stock companies listed in the Iraq Stock Exchange due to the variables (gender, academic qualification, academic specialization, job title, company activity.
First: gender

The probability value (Sig.) corresponding to the "t" test for two independent samples was found to be greater than the level of significance 0.05 ≥ α for the total axis (block chain technology), where the level of significance was 0.336, which indicates that there are no significant differences between the respondents' responses about the block chain technology and the information system accounting due to the gender variable.

Table 14: Results of the one-way ANOVA test for gender

		the number	average	T test	Moral value
decentralization	male	38	3.82	-1.082	0.281
	female	9	4.04		
Transparency	male	38	3.76	-1.000	0.319
	female	9	3.99		
Tracking	male	38	3.80	-0.724	0.470
	female	9	3.97		
(Block chain Technology) and Accounting Information System	male	38	**3.80**	**-0.965**	**0.336**
	female	9	**4.00**		

Second: Academic qualification
It was found that the probability value (Sig.) corresponding to the "unilateral variance" test was less than the level of significance 0.05 ≥ α for the total axis (black chain technology), where the level of significance was 0.033, which indicates the existence of significant differences between the respondents' responses about the total block chain technology and the accounting information system Attributable to the educational qualification variable, and the differences were in favor of the diploma qualification

Table 15 Results of the scientific qualification ANOVA test

		sum of squares	degrees of freedom	mean of squares	F	Moral	Sig
decentralization	between groups	1.859	3	.929	2.736	.067	Not morale
	within groups	62.151	44	.340			
	Total	64.010	47				
	between groups	3.868	3	1.934	4.432	.013	morale

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Transparency	within groups	79.849	44	.436			
		83.716	47				
tracking	between groups	2.543	3	1.271	2.770	.065	Not morale
	within groups	83.979	44	.459			
		86.521	47				
The focus of black chain technology and accounting information system	between groups	2.571	3	1.286	3.474	.033	Morale
	within groups	67.736	44	.370			
	Total	70.307	47				

Table 16 Results of the scientific qualification ANOVA test

	Postgraduate	Bachelor's	diploma
diploma	.262	*.410	
Bachelor's	-.134		
Postgraduate			

Third: the variable of specialization

It was found that the probability value (Sig.) corresponding to the "unilateral variance" test was greater than the level of significance 0.05 ≥ α for the total axis (black chain technology), where the level of significance was 0.395, which indicates that there are no significant differences between the respondents' responses about the blockchain technology and the accounting information system attributed to the variable of specialization

Table 17. Results of a one-way ANOVA test

		sum of squares	degrees of freedom	mean of squares	F	indication	Moral
decentralization	between groups	.393	2	.131	.375	.771	Not morale
	within groups	63.617	45	.350			
		64.010	47				
Transparency	between groups	.891	2	.297	.652	.582	Not morale
	within groups	82.825	45	.455			
	Total	83.716	47				
tracking	between groups	1.412	2	.471	1.006	.391	Not morale
	within groups	85.109	45	.468			
	Total	86.521	47				
The focus of black chain technology and accounting information system	between groups	1.139	2	.380	.999	.395	Not morale
	within groups	69.168	45	.380			
	Total	70.307	47				

Fifth: The company's activity variable

The probability value (Sig.) corresponding to the "unilateral variance" test was found to be greater than the level of significance 0.05 ≥ α for the total axis (black chain technology), where the level of significance was 0.372, which indicates that there are no significant differences between the respondents' responses about the block chain technology and the accounting information system Attributable to the company's activity variable.

Table 18 Results of the "one-variance" ANOVA test of the company's activity

	sum of squares	degrees of freedom	mean of squares	F test	indication	Moral

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decentralization	between groups		3	.129	.371	.742	Not morale
	within groups	63.520	44	.349			
		63.520	47				
Transparency	between groups	.867	3	.284	.650	.573	Not morale
	within groups	82.427	44	.443			
	Total	83.294	47				
tracking	between groups	1.319	3	.462	1.004	.389	Not morale
	within groups	84.840	44	.473			
	Total	.86.159	47				
The focus of black chain technology and accounting information system	between groups	1.079	3	.377	.974	.368	Not morale
	within groups	68.952	44	.382			
	Total	.70.310	47				

STUDY RESULTS

1. There is a significant and strong negative correlation between block chain technology and accounting information systems in listed joint-stock companies in the Iraq Stock Exchange.
2. There is a significant and strong correlation between the dimensions of using block chain technology on accounting information systems in listed joint-stock companies in the Iraq Stock Exchange, with a correlation coefficient of 0.883.
3. There is a significant and strong correlation between decentralization and accounting information systems in listed joint-stock companies in the Iraq Stock Exchange, with a correlation coefficient of 0.791.
4. There is a significant and strong correlation between traceability and accounting information systems in listed joint-stock companies in the Iraq Stock Exchange, with a correlation coefficient of 0.832.
5. There are no significant differences in responses between the participants regarding the use of block chain technology and accounting information systems, attributable to gender, academic specialization, and company activity.
6. There are significant differences in responses between the participants regarding the use of block chain technology and accounting information systems, attributable to academic qualification, and the differences were in favor of those with a diploma degree.

STUDY RECOMMENDATIONS:

1. Block chain technology is the foundation of strong financial systems and enables the provision of financial services 24/7 without borders, thereby increasing the volume of financial transactions.
2. It is necessary to design an accounting system that is flexible and can accommodate all the changes that occur during block chain transactions.
3. It is essential to have qualified individuals with both theoretical and practical knowledge, who are capable of performing accounting work in the context of block chain technology.
4. It is crucial to focus on the physical components of the accounting system, such as hardware and effective accounting software.
5. The advantages of block chain technology should be utilized to develop financial technology and enhance the fintech sector.

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