

## **Blockchain Technology and its Impact on the Auditing Profession and Reassurance Services**

**Seyedeh Atefeh Hoseini**

Assistant professor of Accounting, Islamic Azad University, Firoozkooh Branch, Firoozkooh,Iran  
( Corresponding Author)  
Hosseini\_accounting58 @ yahoo.com

**Mohammadhamed Khanmohammadi**

Associate Professor of Accounting, Islamic Azad University, Damavand Branch, Damavand,Iran  
Dr.Khanmohammadi@yahoo.com

**Mahtab Tootchi Fatidehi**

Ph.D.student of Accounting, Islamic Azad University, Firoozkooh Branch, Firoozkooh,Iran  
MTootchi@yahoo.com

**Submit: 10/11/2020    Accept: 25/12/2020**

### **Abstract**

The development of information technology is one of the inseparable pillars of today's world, so that every year new patterns and technologies are added to human life. New technologies such as high-speed blockchain technology in information processing and analysis, high information security, the possibility of electronic information exchange, providing high quality information, providing the ability to compare information, respond and make the right decision.

Blockchain provides a very new way to record, process and store transactions and financial information and can change the outlook for the accounting, auditing and business professions. Because of the current problems of accounting, auditing and reporting with a multitude of problems such as inefficiency, inadequate analysis and improper dissemination of information among users facing commercial markets and users of business information need arrangements and conditions to increase the transparency of the reporting process.

Therefore, achieving a suitable business information system is very important to solve these problems and issues. In this direction, information technology is one of the useful tools used and the development of information and communication technology paves part of the improvement path. Blockchain is considered as a new technology that affects the auditing profession from the perspective of many experts..

### **Keywords**

Blockchain technology, auditing, assurance and blockchain.

## 1. Introduction

The increasing and comprehensive development of information technology as a useful tool with various applications, has caused many changes in all economic and social fields (Glim, 2006) and as one of the environmental factors on the position, performance and destiny of communities, the organization. And individuals have serious effects (Rong-Ruey & et al., 2006). In this area, the increasing use of information technology by the accounting and auditing professions is no exception (Glim, 2006). Concepts such as accounting, accountability and transparency of financial information have led to the growing need for annual audits of financial statements of companies and organizations. Therefore, auditors should look for new methods in auditing that replace manual methods and increase the efficiency and effectiveness of audit operations (Nazari Radsani, 2013)

With the rapid development of software infrastructure, such as blockchain technology, it seems that in the coming years a large part of the services of large auditing firms (Deloitte, Ernst & Young, PWC and KPMG) will emerge. ) Be provided with the help of such tools. Establishment of a joint working group by organizations and associations related to the professions of auditing, accounting, banking, insurance, taxation, etc. to study, set up and operate such infrastructures is necessary and inevitable (Fawadzi, 1397).

Nowadays, in some publications and interviews, some people point out that with the advent of blockchain in the field of business, the need to audit the financial statements of companies by the auditors is eliminated. They believe that with the advent of blockchain, all transactions and The business operates in a controllable and traceable network path and these events are transparently displayed in the blockchain network so that with these conditions there is no need for an independent auditor to audit at the organizational level.

Contrary to this group, other professionals state that this analysis is conducted without regard to the principle that this view reflects an incomplete view of auditing because it is merely one of the important

aspects of auditing corporate financial statements that involves performing an assessment of the record and Accurate recording of data and transactions is covered, but other aspects of the audit, such as the reliability of the data, their purposefulness, accuracy and provability are other issues that this technology is able to control and pay attention to, at least in the current situation. It is not.

Thus, it can be said that if blockchain technology is implemented in the field of business and connect this data to a reliable block, only this part of the information will be fully reliable and as a result, part of the audit process with the emergence of new technologies will be more accurate. And will be done by audit without control (Pakravan, 1397).

What has emerged today as e-commerce or e-business in the field of economic activities is more than anything the product of developments and developments in information and communication technology (Arab Mazar Yazdi, 2006). The most important feature of information technology is the ease of access to information, the possibility of electronic exchange, low costs and high quality of data transfer (Abdollahzadeh and Maleki, 2016). These developments are directly related to how they perform daily tasks and improve the processes of doing things by them (Arab Mazar Yazdi, 2006).

Therefore, accountants are inclined to use the technology properly. In other words, the role of information in societies has become important with the advent of information technology and manufacturers, especially accountants and auditors should be pioneers in using existing software and provide better services to the economic community, otherwise in the not too distant future the accounting profession and The audit will be weak.

Therefore, the accounting and auditing profession needs to adapt to the existing changes in order to keep pace with the advances in information technology and to lag behind these dramatic developments (Abdollahzadeh and Maleki, 2016). Today, due to various reasons such as low costs and ease of international access through the Internet and the World Wide Web, the methods of financial communication

between companies and stakeholders are rapidly changing (Ahmadpour & et al, 2009).

First, using cloud operations on the Internet, accountants tried to address the shortcomings of accounting, auditing and financial reporting. The benefits of using cloud computing for service providers and end users have led to a rapid increase in online services and applications. In this case, the confidentiality of information is one of the primary concerns for users of cloud services. Accurate and efficient cloud computing remains a challenge for standalone web services.

Blockchain can be considered as the second wave of change in the structure of computing. Adoption of blockchain technologies and protocols is facilitated through integration with modern Internet resources and public cloud services. Blockchain is facilitated by integration with modern Internet resources and public cloud services. Blockchain creates a network through a distributed head office system that, while highly secure, has a democratic structure and does not fail.

This infrastructure can lead to the implementation of non-hackable programs and transparent and strong networks. Decentralized blockchain (unlike cloud computing) does not require large servers. According to David Shansky, CEO of Deloitte USA, the technology provides a safe, transparent, highly disruptive, audited and efficient way to record transactions or any other digital transaction. Interest in blockchain technology has led financial services providers and technology companies around the world to invest more than \$ 1 billion in 2016 alone.

Blockchain has a kind of self-audit ecosystem under which all transactions created in each time period are matched. On the other hand, the accounting profession is based on validation and validation, these categories can be easily implemented by blockchain facilities.

According to Virich, Kurik, and Pearson (2012), significant changes in the accounting environment today have led to the high importance of research in auditing and accounting, as well as the complexity and multiplicity of business transactions, increasing auditors' need for comprehensive information (Kevin

and Mikmischel , 2017). Blockchain technology can transform the relatively old accounting profession. The design, implementation and application of blockchain in accounting has not yet been fully completed, but given the advances made, the transition time of accountants and auditors to this technology is appropriate (Kozlowski, 2018).

Given the direction of accounting in the blockchain platform, the role and importance of the application of blockchain in the auditing profession and its impact on assurance services, the efficiency of the profession and the future audit horizon on the blockchain platform, is essential

## **2. Theoretical framework and research background**

### **2.1. Audit**

"Auditing is a systematic process for collecting and impartially evaluating evidence of claims relating to activities and events," states the Committee on the Fundamental Concepts of Auditing.

Economic, in order to determine the degree of compliance of these claims with pre-determined criteria and report the results to stakeholders "(Hasas Yeganeh, 2013).

Users of financial statements can rely on financial information reflected in financial statements when an independent, competent and impartial person has provided a professional opinion on the validity of this information. In the current socio-economic systems, the task of commenting on financial statements is assigned to independent auditors (Auditing Standards, 2017).

Therefore, in any type of audit, it is necessary to collect the required information and evidence and evaluate and review it. (1397). This serious audit responsibility, which ensures the provision of reliable services to the community, is carried out in the form of specific and codified professional principles and criteria whose main purpose is accreditation, and is referred to as auditing standards, which are quality control standards (1-99 ) Consists of the following two parts:

- 1) Assurance standards (auditing standards (1999-100), overview standards (2999-2000) and assurance service standards except auditing and overview (3999-3000))
- 2) Related service standards (4999-4000) (Auditing Standard, 1396).

## 2.2. Blockchain

Deloitte (2018) identifies five tools and technologies, including data and analysis, artificial intelligence, blockchain, cloud technology, and automated robotics, and predicts that in the next five years, the impact of blockchain technology on corporate financial reporting process will be 18%. Blockchain is a very secure distributed general office system that is available on a private or public network.

In this structure, each workstation (server, PC, laptop, networked devices and everything else in the context of these networks) maintains a complete and updated version of the entire database. Any new data that enters the network uses a mechanism to gain the consensus of the participants in the network, based on a time stamp, to be recorded as a new event in the general office.

Any data must be placed at the end of a chain based on a predetermined pattern to prevent distortion or falsification; And save your previous block digital signature in addition to your original data. This digital signature of the previous block is also called the "hash" code of the previous block. In fact, blockchain takes its name from these interconnected blocks (Davani, 1398 and Saghafi and Jamalianpour, 1397).

Blockchain is truly a sophisticated head office technology. A versatile technology that can record and store transactional and financial data, include healthcare data, or even track product flows, related information, and supply chain payments. . Blockchain, in addition to its extraordinary transparency and security, can meet many practical needs and even provide a certain level of anonymity and anonymity to ecosystem users (Deloitte, 2018).

## 2.3. Blockchain and Auditing

Inherent accounting and auditing problems both financially and temporally such as poor quality of financial statements, high financial and audit costs, lack of shareholder control over the company and insufficient security of financial data (Potekhina & Riumkin, 2017), post-warning The occurrence of audit reports, correspondence and correspondence and wasting time in connection with the audit Parent company and auditor or auditors of affiliated companies (Davani, 1398), non-return of some submitted confirmations and their low reliability (Deloitte, 2016) have remained unresolved for a long time. One of the major errors that calls into question the accuracy of the audit is the detection of fraud, which is a difficult audit task. Investigating what is happening in real time, rather than examining selected samples with respect to reality, is a significant deviation from current auditing methods (Levenby & Sahlin, 2018).

Three examples of applications of decentralized models and blockchain technology in the areas of auditing and financial reporting are transparency in transactions and digital currencies, which require centralized regulation and supervision (Davani, 1398). Blockchain has many benefits for businesses, which can include time savings, cost savings, more security, enhanced privacy, improved auditing, increased operational efficiency, greater auditors' access to transactions (Abbasi, 1397), reduced costs. International transactions (Fintecnet, 2017), improving storage space for information, reducing human error, cyber security (Abreu & et al., 2018), Transform financial reports into a living document and accessible to all stakeholders (Saghafi and Jamalianpour, 1397 and Antipova, 2018), increase the speed and quality of many accounting operations (Kozlowski, 2018), provide the possibility of comparing information, facilitate response As if making the right decision, smart and quality reporting and more successful risk assessment (Davani, 1398), changing the audit schedule from retrospective (after the transaction) to real time (timely) (Davani, 1398 and Drane, 2016), Necessary transparency in transactions (Davani, 1398

and O'Leary, 2017), prevention of mistakes, fraud and fraud in transactions (O'Leary, 2017), Auditors' oversight of transactions and ensuring their accuracy at the time of the transaction (Deloitte, 2017), creating an appropriate turnaround chain and structuring the data record in their blocks (Day and Vasarehelyi, 2017 and Deloitte, 2016), change Efficiency and cost in the audit environment (Psaila, 2017), noted.

Due to the capabilities of blockchain and other new technologies, it is possible for this system to have audit software, in which case the audibility of information can be greatly increased and instantaneous auditing can be done in an environment where the role of the mirror For the physical and material environment, all processes and events of the company can be reviewed and handled (Dai, 2017).

#### **2.4. Review of empirical evidence**

Borhani in 1400 research with the aim of providing a model for using blockchain technology to improve the performance of accounting and auditing and financial reporting in Iran by identifying the strengths and weaknesses of this technology, determining the role of accountants in accepting this technology and feasibility and implementation of blockchain technology in Is Iran.

The results show that accountants and auditors are receptive to blockchain technology. The main reason for accepting this new technology is perceived usefulness as a result of a positive impact on the quality characteristics of information and accountants had new roles and tasks in their field of work. Should be considered. This research in The scientific background helps to better understand the factors that accountants accept new techniques and their impact on the current purpose and application of the system in the field of financial reporting.

Barzegar and Ahmadi in their article entitled Auditing in the world of blockchain in 1399 pointed out that the use of blockchain, increases public confidence in financial information in an incredible way and eliminates some of the assurance services of auditors. On the other hand, this technology increases the credibility of this profession by removing some

limitations in the principles of accounting, auditing and finance, and points out that in the near future, all companies will be accountants and technology-aware auditors. Will need.

Arab Mazar Yazdi and Ganji (1398) article on the subject of blockchain and its applications in the accounting and auditing cycle, raises the initial issues of how to create a transparent, verifiable and timely accounting ecosystem using blockchain technology. In addition, blockchain has the ability to revolutionize the current audit approach and to set up an automated audit system more accurately. In addition to these potential applications, blockchain technology can be a viable and secure alternative to current accounting and auditing systems.

Kashanipour and Lotfi (1398) in the research of blockchain technology in accounting and auditing concluded that the implementation of blockchain technologies in accounting and auditing does not change their basic principles but increases auditing capacity. In some countries, blockchain is accepted for auditing as a practical matter, including at the national level.

Rabihawi (1397) presented the article on the use of blockchain digital currencies in auditing accounting. He points out that the accounting profession is based on accreditation. These are topics that have also been proven in blockchain technology. Due to the characteristics of blockchain, its use leads to improved efficiency and acceleration of audit accounting processes.

In 2021, Elmal and Manita conducted a qualitative study of how blockchain innovation could affect the auditing profession. The results of this study, which was conducted on a sample of 17 auditors, show that this technology can save audit firms in six key levels and improve audit performance, covering the entire statistical community instead of the sampling method. Audit focus on testing controls rather than testing transactions, establishing an ongoing audit process, performing a more strategic audit role, and developing new consulting services. In addition, the need to establish a clear and coherent regulatory system and

new auditing standards allows auditors to incorporate this technology and facilitate auditing operations.

Desplibin et al. (2021) conducted a study on the subject of being or not being: the future of accounting and auditing. They reviewed the literature and took a forward-looking approach to the use of blockchain in accounting and auditing, and addressed three key issues regarding the future of blockchain in accounting and auditing, including changes in accounting techniques, fundamental developments in accounting and auditing, and Fundamental developments in the work, skills and training of auditors.

Silva et al. (2021) investigated the potential effects and applications of blockchain technology in auditing. They found that new features, such as real-time auditing, related to the physical existence of assets and their comparison with what was included in the blockchain and accounting records. The real world by auditors reflects new truths and new challenges in terms of skills and knowledge.

In 2020, Gregor and Carpenter wrote an article on the potential threats to the auditing profession, auditing firms, and key audit processes in the use of emerging technology. This article provides a qualitative analysis of the previous literature on the threats posed to audit firms during the implementation of blockchain technology.

These threats include concerns about the integrity and security of data entry, the auditor's over-reliance on technology to warn of professional advancement and professional judgment, skills shortages, technology implementation costs, and disruptions. The terms of the auditing profession and auditing standards are potentially outdated.

Frey & et al. (2020) conducted a study on auditors' goals for using blockchain technology: Evidence from four major accounting firms in Italy. The study examined the factors that motivate auditors to use blockchain technology, based on evidence from employees of four large companies in Italy. This study uses an integrated theoretical framework that integrates the third version of the Technology Acceptance Model (TAM3) and the Integrated Technology Acceptance and Utilization Theory

(UTAUT). The analytical model is based on the application of the structural equation model with partial estimation of the least squares on the data collected through a Likert-based questionnaire. Findings show that the main predictor of auditors' intention to use blockchain is performance expectation and social impact.

In 2019, Schmitz and Leoni researched accounting and auditing during blockchain technology. They found that the most discussed topics in scholarly works and professional resources were governance, transparency, and trust issues in the blockchain ecosystem, continuous auditing with blockchain capabilities, smart contract applications, and paradigm shifts in the role of accountants and auditors. Based on these four topics, practical concepts are provided for accountants and auditors on how to deal with blockchain development and roadmaps.

Yu & et al. (2019) in a study entitled Blockchain: Introduction and Application in Financial Accounting stated that fraud against raw data is a threat that this application may pose, but this problem is reduced by auditing. Finds. The focus of auditing, independent of the prevention of accounting fraud, has shifted to the analysis of the soundness and reasonableness of business events. In addition, the role of financial accountants in recording transactions and preparing financial statements will be changed to ensure the authenticity of the documentation and the reliability of the smart contracts used in the accounting blockchain.

Other threats, including the reliance on corporate information and increasing regulatory issues, could be barriers to this application. One possible solution to these problems is to use a blockchain consortium instead of a general blockchain, but it also weakens the core features of blockchain technology. Overall, the blockchain application in financial accounting has opportunities and threats, and it is a technology that is mature enough and is likely to bring about fundamental changes for financial accounting and auditing and even the entire financial markets.

Ingehrami (2019) in a study examined the accounting information system at the time of blockchain. The results show that blockchain technology can bring another field

to accounting. Instead of recording different events based on their transaction receipts separately, companies can record their transactions jointly and create an interconnected and robust accounting system. It also states that companies can benefit from blockchain in a variety of ways.

- 1) Standardization allows auditors to automatically confirm most of the important information stated in the financial statements,
- 2) the time and cost of auditing can be significantly reduced,
- 3) auditors They can explore the important points with the extra time they get from this part.

### 3. Audit reasons

#### 3.1. New job opportunities for auditing

Blockchain provides a new business for auditors, such as reviewing certain transactions and verifying the

existence of digital assets and proving the consistency of information in the blockchain. New tasks can be challenging, especially if there is no centralized manager in the blockchain.

Auditors need to use their expertise to develop new methods to prove ownership in information systems auditing. Table 1 lists the opportunities and challenges that auditing firms may face in blockchains.

In addition, blockchain can fundamentally change the work process of auditors. Because a complete record of the transaction is stored in the blockchain. Auditors do not need to apply and wait for the other party to receive the data and documentation. In addition, blockchain goes beyond the traditional audit sampling process, and auditors can constantly review transactions in any given period. Acceptance of the blockchain frees up resources that were previously used to gather evidence and approvals.

**Table 1: Opportunities and Challenges of Using Blockchain**

Audit operations	Blockchain Effects	Internal Audit	Independent audit
Gathering evidence	<ul style="list-style-type: none"> <li>• Survey of the whole community instead of the traditional sampling approach</li> <li>• Direct access to transaction history</li> </ul>	*	*
Verification and validation of transactions	<ul style="list-style-type: none"> <li>• Real-time validation of transactions by a group of data miners</li> <li>• Confirmation and maintenance of transactions are recorded by all users</li> </ul>	*	*
Assess compliance	<ul style="list-style-type: none"> <li>• In accordance with the latest law, standards and regulations</li> <li>• Immediate delivery of relevant regulations to the intern</li> <li>• Quick detection of violations</li> </ul>	*	
Transaction modification	<ul style="list-style-type: none"> <li>• Automatic correction (if transactions between sections of a blockchain network are given separately)</li> <li>• Instant payment</li> <li>• Reduce the time spent to modify and increase efficiency</li> </ul>	*	*
financial reporting	<ul style="list-style-type: none"> <li>• Timely financial reporting</li> <li>• Free from distortion</li> <li>• Less tendency to cheat</li> </ul>	*	*
Planning and consulting	<ul style="list-style-type: none"> <li>• Provide accurate and complete records for auditors to quickly identify problems, prioritize programs, and find long-term patterns</li> </ul>	*	
Decision support	<ul style="list-style-type: none"> <li>• Provide reliable and timely information stored in the blockchain to analyze action forecasts</li> <li>• Facilitate smart contracts with embedded analytical models</li> </ul>	*	

Liu& et al. (2019)

### **3.2. Moving from the test of transactions to the test of controls**

Regardless of the performance of the blockchain, it is important to note that transaction records stored in the blockchain do not necessarily guarantee the reliability of the organization's financial statements. For example, a transaction that takes place in a chain may be executed between two parties to the transaction and an out-of-chain agreement or a fraud in the transaction may occur. Therefore, the effectiveness of internal controls around the blockchain is important. When auditors encounter a particular blockchain, they need to consider customer motivation, protocol changes, blockchain code quality, and power allocation between the parties to the transaction.

After all, auditors do not just focus directly on transaction testing, they also need to check existing controls to make sure the blockchain is in place. The table above shows the potential effects of blockchain on internal and independent audit operations.

### **3.3. Audit developments**

It is clear that the use of blockchain technology in an organization does not eliminate the need for system auditing nor the need for an independent auditor. Instead, the technology changes the way these auditors extract data from the system, recording, evaluating and analyzing this data.

In fact, blockchain layered technology allows organizations to benefit from a more sophisticated, complete, and transparent audit of their system, and to obtain real-time results from their blockchain. The data will irrevocably and consistently assist many audit processes and facilitate many audit operations. However, this amazing innovation also has its requirements and considerations, and from an audit perspective, the existence of some information constraints, the existence of some technical and material defects in the system and the like can cause problems in the audit processes in the system.

Problems that require accurate and appropriate response, and this response ultimately means changing

the overall audit processes in the organization. The adoption and implementation of blockchain technology on a practical scale will impose some changes on current auditing techniques and methods. Eventually, the auditors will change their working groups so that they can deal with this emerging and different technology with more expertise. The use of blockchain technology in an organization does not eliminate the need for system auditing, but rather changes the way these auditors extract data from the system, recording, evaluating, and analyzing data (Deloitte, 2017).

### **3.4. Application of blockchain in auditing**

Some of the things that blockchain technology can help auditors with include:

- 1) Human resource security control: When some employees leave work or change positions, people's access to the network also changes.
- 2) Asset management control: This control refers to maintaining the ownership of hardware tokens or laptops.
- 3) Access control: In order to prevent unreliable and aggressive people from accessing to record and read information.
- 4) Environmental and physical security: includes the management of all hardware security modules, physical security measures and security keys.
- 5) Operational security controls: includes all standards and infrastructure control processes.
- 6) Encryption controls: Authentication is based on the unique cryptographic authentication keys of the system.
- 7) Information security-based accident management controls: In case of information leakage or security gap in the system, these controls can accelerate and facilitate the processes of following up, handling and responding to the problem.

### 3.5. Advantages of using blockchain

Blockchain can be a factor in the transformation of the relatively old accounting profession. The design, implementation and application of blockchain in accounting has not been fully done yet, but due to the progress made, the time spent by accountants and auditors on this technology is appropriate (Kozlowski, 2018).

A blockchain-based accounting system has a distributed general ledger and a blockchain, which inherently stores data logically. Recording transaction records in a general ledger is the basis of the accounting process. Now, by decentralizing this general office, we can safely increase cooperation between different institutions and increase the efficiency and effectiveness of accounting. Decentralized systems make it possible to turn financial statements into a living document so that all stakeholders can access them. In general, blockchain has many potentially positive effects. In one division,

the effects and benefits of using it can be summarized in Table 2. The primary purpose of this technology in financial accounting and reporting is to facilitate the preparation, dissemination, exchange and analysis of business information and prevent the possibility of fraud in organizations.

Kwilinski also stated during his research in 2019 (Table 3) that blockchain assistance in the accounting process in the form of collecting, grouping and streamlining or flow of information, quick access and presentation of information, reducing the distance between receiving information and inserting it in the database Data is the reduction of risks or errors in accounting and decision-making processes that allows the company to avoid distorting information in accounting. Blockchain helps integrate all levels of accounting to create an integrated database, generate automated reporting, and ensure effective operational control.

**Table 2: Comparison of blockchain value for consumer and organization**

Property	Consumer blockchain	Blockchain belongs to an organization	Organizations working on a blockchain
Distributed processing network	Increase exchange speed and reduce latency	Increasing the speed of exchange between units leads to a reduction in arrears	Increasing the speed of exchange between units leads to reducing arrears and costs
Distributed head office	Reduce exchange prices	Increase accessibility, reliability and maintenance of services	Increase accessibility, reliability and maintenance of services
digital signature	Improve quality, reliability and access to services	Increase efficiency or standardize data format between units and ensure process integrity	Increase efficiency or standardize data format between multipliers and ensure process integrity
Programmable logic	Increase transparency	Improved audit capability for instant verification of records	Reduce the risk of fraud, error and invalid transactions throughout the group
Public vs. Private	Increase confidence	Identify participating clients and departments	Improved audit capability for instant verification of records

**Table 3: Benefits of using blockchain in accounting according to Kwilinski**

Organizational management	Accelerate the receipt of information for effective decisions, flexible and responsive to changes in external and internal environment, provide complete, truthful and impartial information to users to maximize the objectivity of their decisions
Economical	Save on information retrieval, reduce organization or bookkeeping costs, save on payroll accounting, save on accounting software
Professional	Establish IT control to ensure transparency, accounting efficiency, reasonable assurance that financial statements are generally free of distortion, expand the scope and tasks of using accounting information

### 3.6. Prospects and suggestions

Blockchain technology has created tangible challenges in the auditing industry and needs to change. The comprehensive knowledge of auditing firms in the field of business and government, allows consultants to use these new technologies.

To prepare for the changes resulting from this destructive technology, auditing professionals must adapt and enhance their strategic role. At this point, auditors should take the following initial steps to adapt to the new environment:

- 1) Acquiring competency in blockchain technology and blockchain management: Auditors should be able to evaluate the costs and benefits of using specific blockchains and provide advice on the implementation of blockchain to their clients. Audit firms can achieve this goal by formulating strategies and training them.
- 2) Active participation in blockchain development, focusing on risk control: Auditors should take steps forward and examine the impact of blockchain implementation. Audit firms should focus on evaluating the effectiveness of risk management and provide management solutions and ensure internal control. The rapid growth of this technology can provide many opportunities for auditors. To provide quality services, auditors must use the following long-term perspectives.
- 3) Continuous audit: Blockchain applications have enabled auditors to have instant real-time access to transaction records.
- 4) Growth of consulting activities: By freeing up the resources used in the traditional method of data collection, auditing firms can use appropriate data analysis in blockchain and consulting services such as control design, change management and management. Expand blockchain (Liu et al., 2019).

### 4. Discussion and conclusion

At present, in Iran, in the last two to three years, issues related to blockchain, although not raised by professional institutions, and according to the measures taken in the developed world, the move to use blockchain (taking into account the circumstances Sanction) is inevitable.

Due to the novelty of international issues, the actions of the Central Bank and other regulatory and regulatory bodies in Iran in order to properly understand (understand) the effects of blockchain and the development of its applications and concepts in financial markets and financial and credit institutions in Iran. With the aim of aligning with international changes and keeping pace with new changes, it is necessary to take the necessary measures before the opportunity to interpret and understand the new changes is limited (Davani, 1398). Due to the speed of developments in the third millennium, especially in the field of information technology and virtual production of data in the business environment, accounting and management information systems are not immune from the mentioned changes and witness the widespread use of information technology in accounting and We will be auditing.

Considering the changes that Blockchain will make to the new way of doing business, the changes facing the accounting profession can include changes in the position of auditors from those who are responsible for maintaining financial information based on accepted accounting principles to people who specialize in technology. Ensure information on ensuring compliance of automated platforms such as blockchain with accounting and reporting standards. Auditors, as the assurance officers of business affairs, have the greatest ability to reassure users of financial information. Given the changes that new technologies such as blockchain will bring to the accounting and auditing professions, there is a need to look differently at the training and professional contexts that give auditors the ability to acquire the competencies needed to perform professional operations. Gives on new terms.

One of the most important challenges for professionals in ensuring the accuracy of transactions on the blockchain platform, can be considered the problems associated with establishing the necessary mechanism to determine the role of accountants and auditors, which due to professional qualifications and knowledge of accounting standards and Auditing and other examples required in this area have provided professional services to qualified users with qualified or certified titles. With these interpretations, with the dramatic changes ahead, accountants and auditors and assurance service providers, the basic need for full familiarity with modern information systems and the pathology of such technologies in the current economy is essential.

## References

- 1) Abreu, P. W., Aparicio, M., & Costa, C. J. (2018). Blockchain technology in the auditing environment. Presented at the 13th Iberian Conference on Information Systems and Technologies (CISTI).
- 2) Antipova, T. (2018). Using Blockchain Technology for Government Auditing. Presented at the 13th Iberian Conference on Information Systems and Technologies (CISTI).
- 3) Appelbaum, D., & Nehmer, R. A. (2017, July 7). Designing and Auditing Accounting Systems Based on Blockchain and Distributed Ledger Principles.
- 4) Barzegar, Ghodratollah and Alireza Ahmadi, (1399), Auditing in the Blockchain World, Fourth National Conference on Research in Accounting and Management.
- 5) Borhani, Seyed Abbas, (1400), The model of using blockchain technology to improve the performance of accounting, auditing and financial reporting in Iran, PhD thesis, Allameh Tabatabaei University.
- 6) Cavalli-Sforza, V and Ortolano, L (1984) Delphi forecasts of land use: transportation interactions, Journal of Transportation Engineering, Vol 110, No 3, pp 324-339.
- 7) Chartered Professional Accountants Canada(CPA CANADA)& American Institute Of CPAs(AICPA).(2017). Blockchain Technology and Its Potential Impact on the Audit and Assurance Profession.
- 8) Cheng, C.H. & Lin, Y. (2002). Evaluating the best main battle tank using fuzzy decision theory with linguistic criteria evaluation. European Journal of Operational Research, 142, 174-186.
- 9) Davani, Gholam Hossein, (1398), The future of accounting profession in the light of cloud computing and blockchain, Accountant Monthly, year 35, consecutive numbers 326 and 327.
- 10) Day, Jun, Yunsen Wang, and Miklos A. VaVasarhelyi. (2017). Blockchain: An Emerging Solution for Fraud Prevention, The CPA Journal.
- 11) Dai, J. (2017). Three Essays on Audit Technology: Audit 4.0, Blockchain, and Audit App (Doctor of Philosophy). Rutgers, The State University of New Jersey, New Jersey.
- 12) Deloitte. (2018). Us Audit Quality Report, Our responsibility, our commitment.
- 13) Deloitte.(2016).Blockchain:Democratisedtrust, <http://www2.deloitte.com/content/dam/Deloitte/uk/Documents/technology/deloitte-uk-tech-trends-2016-blockchain.pdf>.
- 14) Deloitte. (2017). Blockchain Technology and Its Potential Impact on the Audit and Assurance Profession.
- 15) Desplebin, Olivier, Gulliver Lux and Nicolas Petit, (2021), To Be or Not To Be: Blockchain and The Future of Accounting and Auditing, DOI: 10.1111/1911-3838.12265.
- 16) Drane, J.(2016). Wait, blockchains need audited?!
- 17) Elommal, Najoua and Riadh Manita, (2021), How Blockchain Innovation Could Affect the Audit Profession: A Qualitative Study, Journal of Innovation Economics & Management, 2021/0 prepublication.
- 18) Ferri, Luca and et all, (2020), Ascertaining Auditors Intentions to Use Blockchain Technology: Evidence from the Big Accountancy Firms in Italy, Meditari Accountancy Research.
- 19) Fintecnet. (2017). Four Blockchain Use Cases for Banks. Retrieved April 17, 2018, from

- [https://blockchainapac.fintecnet.com/uploads/2/4/3/8/24384857/fintech\\_blockchain\\_report\\_v3.pdf](https://blockchainapac.fintecnet.com/uploads/2/4/3/8/24384857/fintech_blockchain_report_v3.pdf).
- 20) Gregor, Dale Mc and Riley Carpenter, (2020), Potential Threats for the Auditing Profession, Audit Firms and Audit Processes Inherent in Using Emerging Technology, Conference paper in Business and Management Review, December 2020.
  - 21) Inghirami, I.E, (2019), Accounting Information System in Time of blockchain, Italy, University of Milano-Bicocca, Academia. Edu.
  - 22) Kozłowski, S. (2018). "An Audit Ecosystem to Support Blockchain-based Accounting and Assurance. Continuous Auditing", 299–313. <https://doi.org/10.1108/978-1-78743-413-420181015>.
  - 23) Kashanipour, Mohammad and Hossein Lotfi, (1398), Blockchain Technology in Accounting and Auditing, 17th National Conference on Accounting, October 2017, Farabi Campus, University of Tehran.
  - 24) Kwilinski, A.(2019).Implementation of blockchain technology in accounting sphere. Academy of Accounting and Financial Studies Journal,23,1-6.
  - 25) Lee, H., Lin, Y., Petway, J. R., Settele, J., & Lien, W. (2018). Consumption-Based Blockchain Accounting of Telecoupled Global Land Resource Debtors and Creditors. *Environments*, 5(51). <https://doi.org/doi:10.3390/environments5040051>.
  - 26) Levenby, R & Sahlin, E .(2018). Blockchain in audit trails - An investigation of how blockchain can help auditors to implement audit .
  - 27) Liu, M., Wu, K., & Xu, J.(2019). How Will Blockchain Technology Impact Auditing and Accounting: Permissionless versus Permissioned Blockchain .Current Issues in Auditing,Volume13,Number2.
  - 28) Maesa. D. D ,Mori.& PauraRicci. L(2019), A blockchain based approach for the definition of auditable Access Control systems,<https://doi.org/10.1016/j.cose.2019.03.016> Get rights and content. Vol. 84, July 2019, P P. 93-119.
  - 29) O’Leary, D. E. (2017). Configuring blockchain architectures for transaction information in blockchain consortiums: The case of accounting and supply chain systems.*Intell Sys Acc Fin Mgmt*, 24, 138–147. <https://doi.org/10.1002/isaf.1417>On Blockchain Auditability. (2016, November 14). The Bitfury Group.
  - 30) Pakravan, Loghman, (1397), China Blockchain Technology and its Potential Impacts on the Auditing Profession.
  - 31) Potekhina, A., & Riumkin, I. (2017). Blockchain – a new accounting paradigm (Master degree thesis) . Umeå School of Business and Economics.
  - 32) Psaila, S.(2017). Blockchain: A Game Changer for Audit Processes? Deloitte Malta Article.
  - 33) Rong-Ruey,D.,Chee W. Chow, Huijing Chen, 2006, Strategy ITS Applications for Planning and Control, And Firm Performance The Impact of Impediments to IT Implementation, *Information & Management* 43. pp. 939-949.
  - 34) Saghafi, Ali and Jamalianpour, Mozaffar, (1397), Blockchain and the Future of Accounting and Auditing, *Accountant Journal*, No. 313, June 1397.
  - 35) Schmitz, Jana, Giulia Leoni, (2019), Accounting and Auditing at the Time of Blockchain Technology: A Research Agenda, *Australian Accounting Review*.
  - 36) Silva, Romildo, Helena Inacio and Rui Pedro Marques, (2021), Effective and Potential Implications of Blockchain Technology for Auditing, *World Conference on Information Systems and Technologies (CIST)*, AISC1368.
  - 37) Simoyama, F. de O., Grigg, I., Bueno, R. L. P., & de Oliveira, L. C. (2017). Triple entry ledgers with blockchain for auditing. *Int. J. Auditing Technology*, 3 (3), 163–183.
  - 38) Yu, Ting, Zhiwei Lin and Qingliang Tang, (2019), Blockchain: The Introduction and Its Application in Financial Accounting, *The Journal of Corporate Accounting & Finance*.



## فناوری بلاکچین و تاثیر آن در حرفه حسابرسی و خدمات اطمینان بخشی

### سیده عاطفه حسینی

استادیار، گروه حسابداری، واحد فیروزکوه، دانشگاه آزاد اسلامی، فیروزکوه، ایران

(نویسنده مسئول)

Hosseini\_accounting58@yahoo.com

### محمد حامد خانمحمدی

دانشیار گروه حسابداری، واحد دماوند، دانشگاه آزاد اسلامی، دماوند، ایران

Dr.Khanmohammadi@yahoo.com

### مهتاب توتچی فتیهدی

دانشجوی دکتری، گروه حسابداری، واحد فیروزکوه، دانشگاه آزاد اسلامی، فیروزکوه، ایران

MTootchi@yahoo.com

### چکیده

توسعه فناوری اطلاعات یکی از ارکان جدایی ناپذیر دنیای امروزی است به نحوی که هر ساله الگوها و فناوری های جدیدی به زندگی بشر افزوده می شود. فناوری های نوین از جمله فناوری بلاکچین با سرعت بالا در پردازش و تحلیل اطلاعات، امنیت بالای اطلاعات، امکان مبادله الکترونیک اطلاعات، ارائه اطلاعات با کیفیت بالا، فراهم نمودن امکان مقایسه اطلاعات، پاسخ گویی و تصمیم گیری درست را تسهیل نموده است. بلاکچین روش بسیار جدیدی را برای ثبت، پردازش و ذخیره سازی تراکنش ها و اطلاعات مالی فراهم می کند و می تواند چشم انداز حرفه حسابداری، حسابرسی و تجارت را تغییر دهد. از آن جا که امروزه حسابداری، حسابرسی و گزارشگری رایج با انبوهی از مشکلات چون عدم کارایی، تحلیل نامناسب و انتشار نامناسب اطلاعات در بین استفاده کنندگان روبه روست بازارهای تجاری و استفاده کنندگان اطلاعات تجاری به تمهیدات و شرایطی احتیاج دارند تا شفافیت مراحل گزارشگری را افزایش دهند. بنابراین دستیابی به یک سلسله سامانه اطلاعاتی تجاری مناسب برای حل این مسائل و مشکلات بسیار مهم است در این مسیر فناوری اطلاعات یکی از ابزارهای مفید مورد استفاده است و پیشرفت فناوری اطلاعات و ارتباطات بخشی از مسیر بهبود را هموار می سازد. بلاکچین به عنوان فناوری نوین که بر حرفه حسابرسی تاثیرگذار است از دیدگاه بسیاری از صاحب نظران مطرح می شود.

### کلمات کلیدی

فناوری بلاکچین، حسابرسی، اطمینان بخشی و زنجیره بلوکی.

