



## The Impact of Blockchain on Accounting Information Systems

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### Abstract

The objective of the research is to clarify what Blockchain technique is and the developments of its various uses, and identify the accounting perspective of this technique and the possibility of using it in accounting work. It also aims at demonstrating how to utilize its Blockchain technique in accounting information systems, and identify the most important potential effects of the use of technique in accounting information systems. To achieve the research objectives, a descriptive approach was adopted to discuss the fundamentals of Blockchain technique and its most important accounting implications, in addition, its significance for the usefulness and reliability of the development of automated computing accounting systems. The researchers concluded that the use of Blockchain technology for accounting work requires analysis of the related impact on the development of accounting information systems in terms of their implementations and modules, with the need to fully transition in the design of accounting information systems to electronic sophisticated programs and applications developed and technologically advanced.

**Keywords:** Cryptocurrency; Blockchain; Accounting information systems; Triple entry.

## 1. Introduction

Accounting information systems are open systems that are affected by and affect the environment in which they operate, hence the need for accounting information systems to work continuously and continuously to take advantage of all developments that occur in areas related to the nature of its work in general and the business environment in particular.

In view of the many and successive developments that occur in the IT environment and the expansion of its use and utilization in the business environment and the direct impact on the practice of accounting data systems needs to examine the opportunity to make use of advanced technologies in the function of banking data systems, which represents the first basis in accounting work in the various sectors in which it operates.

Among the recent developments in the field of information technology, the Blockchain is Emerged (Wunsche, 2016; Wang & Kogan 2017; Shyshkova, 2018), which deals with financial data in terms of storage, handling and processing in different ways compared to the usual electronic methods. Where the use of Blockchain technique has been a major revolution in dealing with financial data in the business environment, which requires study and know the possibility of its impact and benefit from the work of accounting information systems in the modern IT environment, which has become a necessity and a prerequisite at present.

Hence, the problem of research can be identified in the following questions: Can Blockchain technique be used in the work of accounting information systems? What effects should be taken into account in the work of accounting information systems using the characteristics of Blockchain technique? What is the accounting perception of what accounting information systems should be in different business organizations? The importance of research comes through the novelty of its subject and the scarcity of accounting research that dealt with, as well as the need to research on how to take advantage of the various recent developments in the information technology environment in the work of accounting information systems. Depending on the descriptive approach in the research through the use of what has been dealt with research and periodicals in the areas of: accounting information systems, information technology, and Blockchain technique.

## 2. Review of Literature

### 2.1. The genesis and evolution of Blockchain

Some researchers point out that the start date of the Blockchain framework was implemented in 1999 when a technical solution was presented to address the time problem for easily editable digital assets, such as audio files, images and text documents, to monitor when the content was generated and modified. How to seal a digital document "(Potekhina & Riumkin, 2017, 10). But the first realistic use of the Blockchain technology was developed by Satoshi Nakamoto in 2009,

when he introduced the first electronic cash system known as Bitcoin which utilizes Blockchain as a fundamental method of monitoring and checking this digital cash transfer. And defined the definition of Crypto and Bitcoin in his essay Bitcoin: The Cash System A letter from a peer-to-peer" (Potekhina & Riumkin, 2017).

It is noted that the beginning of dealing with Blockchain technique has been linked as the basic technique of digital money (Bitcoin). While (Bitcoin) is still working on the original Blockchain, as well as there are now versions of the next generation of Blockchain that has Much wider application of cryptocurrencies, where they can digitally represent and exchange different types of assets and information.

In reality, Blockchain started as an electronic transaction logbook (i.e. database) with unique features designed to create secure, accurate, open and usable documents. Different implementations of Blockchain tend to be more than servers. Capacity to encrypt and implement some business logic inside Blockchain (Wunsche, 2016, 8), but since then, Blockchain technology has evolved and more advanced implementations have been developed than Bitcoin.

To track the development of Blockchain technique, three generations can be identified:

- **First Generation:** As cash and money transfer services, such as payroll and remittance services. Currently, there are hundreds of different forms of cryptocurrency with the biggest bitcoin left on the market, and bitcoins may have different advantages, such as connecting to money or goods, but the essence remains the same—used in digital property transactions and transfers. (Potekhina & Riumkin, 2017, 10).
- **Second generation:** Blockchain is a network of smart contracts that is more complex than just a currency. Smart contracts will represent shares, bonds, futures, mortgages and smart assets. If we consider that the first generation represents the concept of the decentralization of money, the second generation definition is business decentralization. The concept applies to all systems intended to decentralize interactions between different parties, such as clearing houses, banks and companies. For example, peer-to-peer lending services, crowdfunding platform, and Bitcoin forecasting markets as a potential Blockchain accounting system, the second generation concept is an intelligent contract system where paid transactions and invoices are automatically executed and recorded (Potekhina & Riumkin, 2017, 10).
- **Third generation:** Blockchain is that the Blockchain application system extends this reaches beyond financial markets and includes politics, architecture, culture and science. Examples include Blockchain-based voting systems and a decentralized card names system - and many other applications that use Blockchain's transparency features to promote freedom, democracy, and the fair allocation of wealth. (Potekhina & Riumkin, 2017, 11) The third generation of Blockchain is that the Blockchain application system transcends financial markets and covers government, art, culture and science. Instances include

Blockchain-based voting systems and a decentralized card names system - and other technologies using the openness capabilities of Blockchain to promote freedom, accountability and the equal distribution of resources (Potekhina & Riumkin, 2017, 11).

The broader World Blockchain system is intended to bind the financial world efficiently and offer significant benefits by reducing risk and allowing efficient allocation of resources; as well as the amount of investment coming from different types of financial institutions. Pursuant of PWC (one of the top four auditing firms), in just nine months of 2016, businesses have spent \$1.4 billion during Blockchain (Potekhina & Riumkin, 2017, 11).

In December 2015, the US stock market Nasdaq revealed that issuers were able to conduct financial trades through its Blockchain network. The first Blockchain prototype of the Sydney Stock Exchange was launched in May 2016, which is “the first step towards an immediate trading platform for settlement and transfer when trading” (Wang & Kogan, 2017), as confirmed by Potekhina and Riumkin (2017) Blockchain technology and its many implementations have become a key factor in innovative ideas and solutions for the financial sector. But the theoretical framework of Blockchain, even for the financial industry, is still tainted by ignorance and insufficient knowledge.

It can be said, Blockchain technique may become a necessity and requirement (in the very near future) when working in the IT environment for everything related to the financial and accounting matters of various financial and business organizations.

## **2.2. Blockchain Concept**

Several definitions of Blockchain were based on the degree of understanding and understanding of writers and researchers and their scientific outlook on how to use them in their various scientific and technical specializations. There are also several terms to define them, which can be clarified through the following:

- a. Blockchain is generally defined as an open and shared online database that generally tracks transactions and protects data from tampering (Wang & Kogan, 2018).
- b. Defined (Potekhina & Riumkin, 2017) As a centralized registry of documents or a general directory for all digital transactions or activities that have been executed and exchanged between the participating entities, and each transaction in the general directory is checked by the majority of the program participants. It is a giant spreadsheet for the tracking of all assets, and a multinational accounting system that can cover all types of assets held by all parties around the world.

- c. Blockchain is known as a subtype of Distributed Ledger (\*), which is characterized by temporal storage and often full transparency. In conjunction with distributed consensus mechanisms, Blockchain can indicate the stability of the information stored on the ledger (Rückeshäuser, 2017).
- d. Some researchers have pointed out that Blockchain is a system based on distributed accounting books, or a list of resources or payments that can be distributed across multiple points on the network, allowing each user its own copy. Improvements in all tests are shown nearly concurrently at the same time. Through transfer is written as a data block, and each new block has an encoded copy of the previous block. Blocks are then attached to authenticated signatures to create a chain of actions or transactions; distributed and anti-counterfeiting. As a result, Blockchain creates a real information booklet, in which it is almost impossible to falsify or destroy records to hide certain activities. Thus, Blockchain can be a successful combination of transparency, security and operational control, as it provides reliable data synchronization and protects it from replacement as a result of external interference. Therefore, for accounting operations, this can be an effective tool to ensure transparency and a high degree of trust of users of accounting information and reporting of such data. The implementation of Blockchain will give practical impetus to the development of new mechanisms for interaction between functions, accounting methods and principles. In addition, Blockchain implementation levels should be taken into account. Thus, normative guidance should be provided for implementation at the state level (Shyshkova, 2018).
- e. Others found out that Blockchain is a cryptographic system for storing data in a way that is almost difficult to copy. It can be used for all manner of valuable data (Orcutt, 2018).
- f. Wunsche (2016) suggests the Blockchain is a bitcoin-based technology and is basically an electronic database of transactions with unique features designed to generate safe, accurate, open and usable records. Blockchain related activities can influence many aspects of information management from the way transactions are handled and reported to the accounting, reporting and validation system. Blockchain technology facilitates the exchange of different classes of resources without the need for third-party intermediaries. Thus, capital markets and the broader financial services industry will be the normal implementation. The long-term effects of Blockchain that, however, extend beyond the financial services sector. Since Blockchain can also offer increased accountability and access to information, this could have changed the impact on record keeping, accounting and verification activities.
- g. ICAEW (2017) argues that Blockchain is a fundamental change in how financial records are made, preserved and updated. Instead of just one operator, Blockchain documents are

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(\*) Distributed ledger: A distributed and shared database maintained by consensus in peer-to-peer distribution networks and can, but should not necessarily be characterized by time storage

being spread to all of its clients. Blockchain's innovation lies in the use of a complex system of consensus and validation to guarantee that even without a single holder and time lag between all users, only one accepted version of the truth extends to all users as part of a permanent record, as this provides a form of "Comprehensive Accounting for Accounting Entries."

Through the above, it is noted that the various researchers have focused on the consideration of Blockchain a modern technique within advanced information technology and can be utilized in many areas related to financial and commercial transactions. And is working to conduct those transactions without intermediary intervention as they focus on the lack of a central entity that owns or controls it.

### **2.3. Blockchain from the perspective of accounting and auditing**

Since accounting is inseparable from the system of economic relations in the state, as well as the technical and technical achievements of the present (Hussein et al., 2006), so the Blockchain technique infrastructure that is associated with accounting terminology can be a driving force for changes in the methodological standards of control and accounting activities (Shyshkova, 2018). Which means that accounting should work to develop its methods and procedures in line with the work in the environment of modern technologies, which comes Blockchain technique in the forefront of the present. Then work on the need to think about issuing the accounting and auditing standards necessary to guide accountants and auditors.

Potekhina and Riumkin (2017) points out that the concept of using Blockchain servers and software for accounting purposes derives from the essence of the Blockchain technology as a bitcoin transaction ledger, which means that it is an internal accounting system that reads, records and publishes transaction data. That happened in (Bitcoin). Blockchain is a Blockchain that has recently emerged in the fields of cryptocurrencies and smart contracts as an alternative to ledger computing. Given the potential application of accounting ledger technique, many have expressed their expectation that Blockchain is the future of accounting record keeping, and both new set of transactions added to the end of the series is encrypted with the previous block.

If trying to process a prior transaction, this includes the reprocessing of all existing frames in the chain. As a consequence, this operation should go beyond adding new blocks to the string. Blockchain is permanent or is resistant to manipulation. Accounting as a Transactional Ledger (Coyne & McMickle, 2017).

Several studies have highlighted several areas in which Blockchain technique has helped and supported the accounting and auditing work. These areas include:

### **2.3.1. Blockchain from an accounting perspective**

#### **2.3.1.1. Use of Blockchain in the design of accounting information systems**

- a. By adopting a method of zero-knowledge proof(\*), Wang and Kogan (2018) suggested the creation of the Blockchain-based accounting information system and the development of a model to illustrate the role of the Blockchain-based accounting information system in real-time accounting, continuous monitoring and auditing, and the detection of financial fraud. The use of this development approach helps to maintain the confidentiality of accounting. In short, this proposed system can provide real-time accounting and reporting systems, prevent fraud in payments and guarantee the security of privacy.
- b. Provides Blockchain a free open general ledger to register ownership of a wide range of properties, from shares, securities, real estate and vehicles to luxurious handbags and exquisite artwork. In fact, the state is investigating the use of Blockchain in public records, such as birth certificates, driving licences and university degrees. Using a tracking device (GPS), you can assign a real Blockchain network and represent it with a colored coin or token. It gives a specific symbol for financial and non-financial assets, including currencies, tangible assets and intangible assets (Wang & Kogan, 2017).
- c. It is an alternative technique for bookkeeping. Of example, in due diligence of mergers and acquisitions, a common understanding among key figures allows more time to be spent in the areas of management and advice and a generally quicker system (ICAEW, 2017). It also allows greater transparency than a conventional ledger. This is important in cases where the type of asset is at risk of corruption or embezzlement (ICAEW, 2017).
- d. Smart contracts can be incorporated or replaced by operational and / or administrative functions that affect internal and external reporting. It can translate performance goals and budgets to keep track of contracts for smart performance versus actual results. New Blockchain performance management systems may also be related to performance contracts, efficiency evaluations, and performance bonuses. Non-financial reporting, such as environmental reporting, can also be encouraged. For example, participants may access and monitor Blockchain supply chain information from raw materials to finished products. Blockchain books will easily compile and organize financial reports in real time, thereby reducing accounting gaps at the end of the month. Financial statements of management and committee accounts involving corporate-wide restructuring can be largely automated on Blockchain. Organizers can have access to track payments in real time. Companies can provide investors with access keys that allow them to access financial information in real time. This can make it easier for investors to transfer data to financial models and require

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(\*) Zero-Knowledge Proof (ZKP): A type of authentication by which one party can show to third parties that the transaction produced is legitimate without revealing any sensitive information. For example, an initiator can prove to transaction investigators that his transaction is legitimate without revealing the identity of the trading partners and the size of the transaction.

access to physical payment specifics. A significant notice may be that laws banning selective reporting will remain unaffected and need to be enforced. Appropriate checks and protocols on access keys should also be in place to allow regulators and others to decide who has access to information and when. In fact, the rapid resolution of payments would reduce the time needed to liquidate assets between third parties. Accounts receivable and credit account balances can be included in a new form of smart contract that can be designed to automatically redirect funds once certain conditions have been met (for example, on the basis of negotiated distribution receipts and payment schedules). Inventory may also be modified on the basis of smart asset exchange contracts which respond to the Buyer's Inventory Management Program Purchase Letter (Wunsche, 2016).

- e. Intangible assets representing intellectual property rights can be shown as "digital property contracts" which can be designed to funnel funds automatically. Disputes over property ownership can be settled through the block time stamp function.
- f. Financial capital may be reported on Blockchain. Ownership can be easily transferred in a similar manner to the exchange of cryptocurrencies. New Blockchain books may be produced to document repairs and maintenance. The full history of asset investment will also be available and transferable. This can be demonstrated in the context of the insurance.
- g. Corporate loans can be completely counted as "smart loan contracts" and released as soon as they are described as Smart Blockchain contracts. Such debt obligations can be easily transferred and their maturity date can be tracked automatically.

### **2.3.1.2. Increasing the efficiency of accounting information systems**

- a. The integration of accounting and Blockchain technologies has greatly contributed to the elimination of unnecessary manual effort, the speeding up of payment settlement and the avoidance of financial reporting fraud. It can also radically change the way corporations manage and operate, just as the stock and exchange rules of 1933 and 1934 did (Wang & Kogan, 2018).
- b. Eliminate the time difference between the company's released financial statements. Time delays will be completely eliminated if the company chooses to use a real-time accounting system that helps the general public or at least key stakeholders to track the payment in real time (Potekhina & Riumkin, 2017). It is important to understand the kind of assumptions that investors derive from the timing of the release of the financial statements in order to forecast the implications of their absence.
- c. Provides the opportunity for quick application of accounting processes (Shyshkova, 2018).
- d. Blockchain has the ability to increase the reliability of accounting of payments and resources and serve as a mechanism of holding detailed accounts. This would provide clarification as to rights, responsibilities and source that would, in essence, enable the



accounting profession to expand its scope and disclose more modes of practice than before, and to explore more than the economic reality underlying the transactions reported (ICAEW, 2017).

- e. The use of Blockchain provides accountants with clarification about the ownership of property and the nature of liabilities, and can significantly improve performance. Blockchain also has the ability to improve the accounting profession by reducing the cost of follow-up by ensuring absolute certainty as to the identity and past of properties (ICAEW, 2017).
- f. Good Blockchain applications focus on the cost and timing advantages of removing central peripherals from the system, increasing the security and certainty of a consensus system. Blockchain is not a single technique, but a protocol - a way of doing things - to record transactions. Unlike the Internet, where data is shared, Blockchain technique can be transferred from one party to another. It can also eliminate the need to reconcile divergent ledgers. Any ledger participant can keep track of all previous transactions, allowing for greater transparency and allowing for "self-review" (ICAEW, 2017).

### **2.3.2. Blockchain from an audit perspective**

- a. Several reports, such as PwC 2016 Deloitte 2016, EY 2016, KPMG 2017, have reported that the use of Blockchain technology by auditing firms increases the efficiency and effectiveness of the audit process (Wang & Kogan, 2018).
- b. The advent of Blockchain creates new possibilities and threats for continuous auditing and accounting in real time. Continuous auditing and real-time accounting are designed to develop integrated and real-time accounting information systems to enable reliable and low-cost accounting and auditing. Moreover, the stability and return feature will facilitate the exchange of information and prevent fraud. Although the Blockchain application in accounting and auditing is still in its infancy, it will be promising to share financial statements with high-level security and privacy (Wang & Kogan 2017).
- c. Under Blockchain technique, users of financial information will not need to rely on the auditor's judgment on the integrity of the financial statements, but it is highly possible to ensure that the financial statements are compiled in a timely manner and to make their own non-monetary adjustments, for example, depreciation and inventory valuation (Potekhina & Riumkin, 2017).
- d. In view of the fact that Blockchain will make the dimension of confidence redundant and simplify the process of verifying transactions made in the business registry, it is natural to assume that the audit career will be affected. The main effects of Blockchain-based audit reporting are significant time and audit expenses. Both payments in the accounting system have already existed and the sums recorded are accurate, so it is not necessary to spend time on the manual verification of accounting entries allowing auditors to spend more time

in more important areas such as complicated payment controls and internal control systems. It is believed that the procedure would minimize the position of auditors and make their jobs more effective, but the complete removal of the occupation can only take place in the distant future. In order to take advantage of technological innovations and stay away from business in the future, the four big accounting firms are creating technologies that will allow them to expand, enhance and maintain their position by becoming the first Blockchain vendors on the market (Potekhina & Riumkin, 2017).

- e. Modifying property records from past years this type of error or fraudulent activity will sometimes be difficult under the Blockchain methodology because it is impossible to change the data once it has been written and the data are modified in real time (Potekhina & Riumkin, 2017).
- f. Today, businesses will deal retrospectively with their own database to exploit revenue, and the idea is that the implementation of the Blockchain system can discourage this behavior (Coyne & McMickle, 2017).
- g. Blockchain not only accelerates the documentation and processing of individual processes, but also provides internal operational control (Shyshkova, 2018).
- h. It has applications in external audit. Making assurances about the financial position of the company will be less necessary because some or all of the underlying transactions are visible to market participants. This proposal means a profound change in the way audits work (ICAEW, 2017).

It is noted that the use of Blockchain technique in accounting information systems will directly affect the design of accounting information systems, especially with regard to its main components: documentary group, book group, group reports and statement. As well as the impact on both internal control - external audit and the required technical knowledge and electronic procedures related to each of the programs and applications that can be used in this.

Hence, it is necessary to think about how to prepare accounting, auditing and auditing standards that can guide accountants and auditors as well as internal auditors, as well as the need to be exposed in scientific research to what can be the accounting procedures and in accordance with the principles, assumptions and accounting policies.

### **3. Possible effects on the use of Blockchain in accounting information systems**

Since the use of Blockchain technique is new and has not yet reached a wide range. However, in light of the uses that have been made and expected to reach in light of the successive developments of information technique and its entry into the modern business environment based on information technology, can identify some potential effects on the use of Blockchain

technique in accounting information systems based on the use of electronic means through the following:

### **3.1. Potential impact of Blockchain on accounting work**

The move to a financial system with a broad Blockchain technology provides a number of incentives for the accounting profession. We have the ability to lead and impact how Blockchain is to be implemented and used in the future and to develop Blockchain-led technologies and services. For order to truly become an integral part of the financial system, Blockchain needs to be developed, standardized and strengthened. This process is likely to take many years-nine years have passed since Bitcoin began work, and a lot of work remains to be done. There are also many Blockchain implementations and field projects, but there are very few beyond the design guide or the pilot study stage.

This mentions that accountants are already interested in research, but there is a great deal that the discipline must do. Setting up rules and standards for Blockchain reporting will not be a small challenge, and leading accounting firms should provide their skills in this work. Accountants may also serve as business advisors considering joining major groups and consult on the evaluation of the costs and benefits of the new system. The expertise of accountants with a combination of business and finance would make them important advisors for businesses pursuing these new technologies looking for an opportunity to expand.

The accounting pieces involved in securing payments and the conversion of capital will be distributed by Blockchain. Reducing the need to settle and negotiate conflicts, together with greater certainty over rights and obligations, would make it possible to rely more on how payments are paid for and considered and allow for growth of fields that can be measured. Many of the new accounting department's processes can be changed by Blockchain and other modern technologies, such as data analysis or machine learning, which will increase the efficiency and profitability of the accounting process.

As a consequence, the scope of accounting expertise will change. Many actions, such as credit processes and origin verification, will be reduced or eliminated, while other sectors, such as engineering, consultancy and other value-added practices will be increased.

Additionally, accountants will not have to be developers with detailed knowledge of how Blockchain functions. But they need to learn how to counsel on Blockchain accreditation and understand its effect on their companies and consumers. We should also be able to act as links, having had knowledgeable discussions with both technicians and investors. The expertise of the Accountants will also need to be expanded to include an appreciation of the core features and functions of Blockchain. For example, Blockchain is already in the curriculum to receive an ACA certification from ICAEW.

In the end, Blockchain is expected to be a key strategy. It will also take years-maybe decades-to be fully developed, standardized and incorporated into the Web infrastructure and the financial system. You will also need to work faster and more efficiently and reduce operating costs. But the features you'll offer will be trustworthy records and reduced adjustments. Accounting will also be more effective because of increased confidence in the information available and less time spent on routine procedures such as a compliance statement. This will increase the emphasis on the basic goals of accounting-interpreting the economic value of payments and presenting information to support better decisions (ICAEW, 2017).

In the future of Blockchain, the government could give independent auditors a series of electronic Blockchain 'keys' that would provide unprecedented access to accurate time-stamped data on all transactions. Such exposure can have a significant impact on the audit policies of the auditor. Organizations using Blockchain can conduct ongoing internal audits of their operations, provide an audit trail and submit account analysis at the push of a button (Wunsche, 2016). While the potential impact on accounting may be that Blockchain-based companies have a powerful new collection of reporting tools, along with total payment transparency, to monitor and convey their financial status and results (Wunsche, 2016).

Blockchain technology also offers increased visibility and access to financial and non-financial data that may have a significant impact on current record keeping, accounting, monitoring and governance processes. Systems and processes, like controls, will take a different form but will remain important and necessary (Wunsche, 2016).

### **3.2. Influence the design of accounting information systems**

Andersen (2016) points that the newly created Blockchain is a reliable, distributed, openly available ledger with minimal usage costs. The use of Blockchain for accounting purposes is very exciting. Simplifying compliance with regulatory requirements to improve the current dual accounting system and anything conceivable.

According to (Coyne & McMickle, 2017), because using it as a ledger, this does not mean that Blockchain becomes an alternative to existing accounting books, but rather an enhanced tool for business and accounting records. The advantage of this tool is it's much safer.

Blockchain often refers to various payment systems or even specific accounting standards (e.g., GAAP and IFRS). For order to achieve impartiality, it is important to distinguish the documentation of activities from the accounting storage, even if it is technically possible to encrypt Blockchain accounting rules (for example, an aging method can be programmed into a clever contract for doubtful accounts. In fact, Blockchain functions as a neutral shared database that holds transaction records per se. The system also allows shareholders and auditors to compile individual transactions and produce financial reports at their own discretion (Wang & Kogan 2017).

Under Blockchain, real-time accounting procedures, called real-time real-time accounting, are a software solution that enables currency, derivate and other electronic transfers between two or more peers and stores transaction data in encrypted blocks. Their credibility is checked through a discovery process, and financial statements may be drawn up at any time. In order for businesses and their shareholders to have all the technical advantages, it is important that the real-time Blockchain accounting system has the following characteristics:

- a. Transparency: Transactions should be visible in real time as with Bitcoin
- b. Stability: No programming capability should be given to modify the information when reached in order to ensure that the client does not monitor the discovery energy using the device.
- c. Accessibility: Data needs to be readily available to a wide range of investors (Potekhina & Riumkin, 2017).

The Bitcoin network is a gold standard in terms of these features, but it is likely that private companies using software may want to restrict access to their financial data as greater transparency comes at a cost and may include sensitive information that can give rivals an advantage. A good balance between transparency and fair data protection has not yet been reached. To illustrate the concept of Blockchain-based accounting, some scholars use the word triple-entry accounting described as an upgrade of conventional double-entry accounting (Potekhina & Riumkin, 2017).

From an accounting point of view, Blockchain is a single-entry system that keeps an asset exchange activity database. The "Blockchain" accounting system does not override the conventional double-entry system, which ensures it can be fully expressed in the "triple-entry" process. The concept of the "triple entry" accounting system used by Blockchain accounting professionals varies from that of Ijiri (1986).

The Blockchain-based "triple entry" model is an expansion of the standard double entry system where all accounting transactions are registered by a third entry in the Blockchain. In comparison to conventional accounting, where trading partners access debit and credit reports separately on their own accounts, Blockchain combines shared transaction records with trading group journal entries, which provide extra audit protection (Wang & Kogan 2017).

The third entry (Blockchain) encrypts the financial records of the parties concerned. The dealer must report the discount on the sums earned in cash, and the purchaser will document the credit for the money spent, but these accounting records do not appear in separate books, but rather as a transfer between accounts in the general directory itself, the development of a cohesive collection of accounting records. Since Blockchain is transparent in any software change, it is difficult to incorrect or erase written accounting records (Potekhina & Riumkin, 2017).

Wunsche (2016) points out that Blockchain can provide new means for tracking and transmitting financial information. For example, companies can retain double-entry accounting systems. In addition, the parties to the transaction can register the entry in the Joint Ledger (Blockchain) which will be the "fifth entry." In this way, the payment partners affirm the validity of the transactions in the shared file. This may be valuable to suppliers of warranties. For example, Balanc Company is developing Blockchain technologies to provide this form of triple-entry accounting process.

Ironically, the principle of tripartite accounting was first described three years before the Blockchain was invented in 2005. This identified the idea of using encrypted electronic receipts to check payments between separate counterparties and to store them by a third party and to indicate whether any data in the documents had been updated or removed. With the advent of Blockchain, transactions can become streamlined, inexpensive and more efficient, as the need for a third party to directly hold receipts is replaced by a distributed ledger (Potekhina & Riumkin, 2017).

On the other hand (Shyshkova, 2018) identified the relevant stages and activities within the implementation of Blockchain in accounting operations to provide users with complete, honest and impartial information to maximize the objectivity of management decisions. He outlined a set of advantages and limitations of using Blockchain in accounting, noting that the benefits relate to accelerating access to information for effective decision-making, formalizing control, reducing the cost of accounting regulation and improving the quality of accounting. Restrictions on the use of Blockchain are primarily related to the preservation of information that is a commercial secret and the right to confidentiality and protection of private data. It concluded that the similarity of terminology and sequence of procedures in the accounting system and in the implementation of Blockchain technique could help to improve the quality of accounting information and reporting. This approach will provide a new level of transparency, efficiency and oversight capability in the management system.

Although Andersen (2016) suggests that Blockchain could be the next step in accounting. Instead of holding individual documents based on payment receipts, businesses may write their payments directly to a standard ledger and set up a cross-cutting network for permanent accounting records. Since all authenticated and encrypted entries are locked, it is nearly impossible to fake or delete them or conceal the operation. It is similar to a contract that is only checked digitally by a notary. Organizations will also benefit in many ways: it will allow auditors to automatically check a large part of the most important data on the financial statements. The cost and time required to carry out the review will be significantly reduced. The auditors can also spend more time in places where they can add more value, such as very complicated payments or internal control systems.

### **3.3. The possibility of reducing the cost of protecting the integrity of information and increasing the speed of settlement of transactions**

ICAEW (2017) claims that partnering with Blockchain experts will help accountants form norms that will move Blockchain forward.

Blockchain technology can be slowly integrated into accounting procedures: from maintaining the accuracy of documents to audit reports that can be completely monitored. At the end of the road, fully automated audits may become a reality (Andersen, 2016). ICAEW (2017) points out that there are three things which make Blockchain technology distinct from today's most common ledgers, which are servers owned and operated by one group. The key features are as follows:

- a. Propagation: There are a number of versions of the Ledger (Blockchain), not a single copy. Both parties have access to a complete copy of the Ledger and to all similar and comparable copies, and no group retains ownership of the Ledger. New payments can be released easily and will be distributed on copies of all members.
- b. Permanence: For each client who has his or her own version of the ledger, the reality is agreed universally, the prior transactions cannot be changed without majority approval, which ensures that the Blockchain documents are irreversible, the entire ledger is held by each party and can be checked and confirmed.
- c. Programmability: Some Blockchain strings allow you to store program code on them, as well as ledger entries-create automatic log entries that are executed automatically while running. It's called smart contracts. As the first two of the three core features-proliferation and permanence-are intrinsic to Blockchain and not adjustable.

### **3.4. Potential impact on governance**

Companies using Blockchain may be more transparent, as Blockchain may allow for the identification of a trackable database and a full time frame of all decisions and actions taken by the leadership and the Board. BoardRoom is an early example of the Blockchain governance software created by Ethereum. For future applications, contributors will also be able to electronically register their votes on Blockchain about user recommendations (Wunsche, 2016).

Timely released financial reports, both quarterly and annually, are relevant for a wide range of investors and the financial market as a whole, because they are expected to provide the most significant source of data on the financial health of businesses and their future prospects. Numerous researches show that shareholder reaction to late reporting situations is negative as delays are often perceived as a sign of accounting or management problems and may also mean that management is trying to mitigate data (Potekhina & Riumkin, 2017, 17).

### 3.5. Obstacles to the application of Blockchain in the accounting field

In spite of all the advantages of using Blockchain technique in accounting information systems, some obstacles that may accompany it should not be overlooked.

Coyne and McMickle (2017) identified three of the constraints or obstacles that may stand in the way of the application of Blockchain in accounting are:

- a. The need for privacy that makes the Blockchain public undesirable. This desire for secrecy is not unexpected, because supplier and client lists, unit costs and tactical transactions held in the ledger will form profitable trade secrets.
- b. The ability of companies retrospectively to deal with (Blockchain) own.
- c. Limited Blockchain ability to verify transactions. Even if the accountant and the client share the responsibility to validate the transaction in such a manner that they do not have ample rewrite capacity, the validation of the transaction would remain unsuccessful. Blockchain authentication techniques are not adequate to verify the payment from an accounting point of view. In addition, these strategies avoid double spending. But Blockchain bosses don't know anything about the true health of the contract.

In addition to the above (Coyne & McMickle, 2017):

- d. Accountants still know that checks are necessary to prevent corruption and to handle revenue and accounting errors, and the implementation of Blockchain will not remove this need. For example, Blockchain will not avoid misappropriation of property, nor will it prevent inaccurate calculation or estimate of legitimate transactions.

## 4. Conclusions

The study dealt with the most important implications of the application Blockchain specific and expected in accounting information systems, through the appropriate adjustment in accounting practices and appropriate response to audit procedures, the study found that Blockchain is a technique for the latest developments in the information technology environment. It was used in the financial markets as it was the basic technique for dealing in Bitcoin currency, and then expanded its use to include the world of commerce in its wide form. Also adopt Blockchain technique on the basis that there is no intermediary (third party) when there is financial transaction between two parties; as well as the lack of a central owner to control it or its customers. Due to the close relationship between accounting and the world of finance (in financial markets) accounting has been affected by all financial transactions conducted between two parties, and therefore has been used Blockchain technique in the accounting work of many companies (especially American registered in the financial markets).

In particular, the use of Blockchain technology in accounting work requires that the related impact on the development of accounting information systems for terms of components and components be taken into account, with the need for a full transition in the design of accounting



information systems to sophisticated digital programs and applications built and technically advanced.

Based on the above, the authors stress the need to provide accountants with the technical knowledge necessary to work in the environment of modern technologies, especially with regard to the Blockchain technique and its current and potential accounting uses in light of the rapid and successive developments in the information technologies environment. Continuing scientific research in identifying the areas of utilization of Blockchain technique in accounting and auditing work, especially for researchers in the environment of developing countries due to the scientific and research poverty in this field by theorizing or applying in that environment (as companies or as financial markets). Academic and professional associations specialized in accounting and auditing should also consider the possibility of issuing drafts of accounting and auditing standards that can guide accountants and auditors later in order to catch up with the latest developments in the information technologies environment.

The limitations of this study are not to conduct an empirical or applied test using actual data, a case study or a survey using the questionnaire. In order to face these limitations, this opens many doors for researchers to conduct future research addressing these limitations and limitations by using applied and experimental tools in testing the importance or determinants and requirements Blockchain in accounting work or in the audit.

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