Blockchain Technology: A Paradigm Shift in Accounting

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Abstract

Blockchain, which is still a test technology, its current applications only address certain aspects of small projects. If technology matures, it may have the potential to transform industries and even the economy. It has the potential to bring about significant improvements in accounting and auditing, even in all whole of the financial markets. Blockchain technology is something that is often talked about in the same context as bitcoin. The technology in question others have been regarded as the fourth industrial revolution, which will change the way we conduct business. There are many educational articles which reveal what benefits blockchain can provide for accounting and research, but most a few studies done by asking what the auditors think about technology. This is the first study of its kind in India, and Firms who are often the first users of technology, consultants in India can be considered a good notion.

Blockchain technology and many applications have become a major source of new ideas and solutions for the financial sector. The title containing the term "blockchain" is attracting a lot of media attention and new beginnings to improve something in the blockchain get a bigger investment. But a blockchain theoretical framework or the financial industry is always green and the evidence is insufficient. In this study, we explore the theoretical framework of blockchain applications in accounting, identifying key benefits and a lower case, and discuss its implications for auditing and general accounting and credit risk management especially.

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Introduction

What Is Blockchain?

Blockchain is a smart contract, an artificial intelligence-based technology which uses internet to be the third-party in witnessing the exchange between two known parties. This when applied on to accounting will authenticate the double-entry system by a third validating eye.It is in its embryonic stage and a lot more is still required for its adoption and application.

Blockchain is a technology that allows individuals or businesses to interact directly or on a peer-to-peer basis. People have been sharing information

online for the past 20 years. Users gain online worth through sending them emails, posting on social media, and sharing SMS. Blockchain technology has the potential to revolutionise a variety of sectors. The banking sector, in particular, may see significant changes. Despite the fact that this technology has piqued the interest of a number of big financial organisations, user scenarios remain a bit of a challenge.

Participants can now exchange values on a peer-to-peer basis, rather than just sharing information. Blockchain technology supports both applications (such as location-based applications or dApps) and complicated systems, despite its association with Bitcoin and other cryptoassets (such as smart contracts) the blockchain enables the creation of a range of transactions and the transfer of rights and assets with ease and efficiency.

Without the requirement for an outside entity, such as a bank or stockbroker, and prompt reimbursement, wise contracts can simply transfer and effectively claim car ownership or transfer company shares. This is the removal of the "middle ground" by unleashing a trustworthy peer-to-peer drive to drive what some now refer to as "Web 3.0," which has resulted in the development of $ 2 trillion in assets over the last decade.

Definition

Deloitte, (2016)

Blockchain is another type of database for recording transactions – one that is copied to all of the computers in a participating network.

Cory Ng, 2017

Blockchain can be thought of as a shared database in real time that is continuously reconciled, and all transactions are known by all authorized participants.

J. L. "John" Alarcon, 2019

Blockchain is considered as a new, open and highly secure technology of ledger distribution system; where Data is replicated among all servers on the *Blockchain – an overview*

Undoubtedly, Blockchain represents one of the "hottest" technologies nowadays, with an important potential disruptive effect on our lives. Therefore, is a subject of great interest, both for industry and academia. Being a technology that hasn't reach yet its maturity level, most of the researchers are focusing on its technical aspects. However, Blockchain raises various organizational issues, critical to reaching its full potential. This "organizational perspective" is approached mainly in specific contexts of blockchain applications, while somehow overlooked in the "big picture" of blockchain research.

Giant jump: How Blockchain can improve modern accounting practice

Modern accounting is based on a double entry system. Double entry bookkeeping changed the field of accounting during the Renaissance; solves the problem of managers knowing that they can rely on their books. However, to gain the trust of outsiders, independent public auditors also verify the company's financial information. Each research is a costly task, binding the company's refugees for a long time.

Participants placed their trust in audits held by management to assure them. The obvious problem of the agency created by this technology - Are the auditors working for hiring and paid managers or a community that relies on their integrity to make decisions. Now complete, automated audit of all

transactions is possible in blockchain technology. Blockchain installation applies to the accounting of companies. All transactions are "notified" to Courts, Banks, Tax Authorities, Auditors etc automatically.

Objectives:

This study reviews the current available cademic research on blockchain in accounting and gives a systematic review of literature and state the characteristic and advantages in adoption of this technology.

Review of Literature

In 1991, Haber and Stornetta discuss in the article "*How to stamp a digital document*" a technological solution for the problem of time-stamping easily modifiable digital assets in order to track their origin and any attempt to modify them. They propose computationally practical procedures for digital time-stamping of easily modifiable documents, by creating cryptographically secured chain of blocks that makes impossible to back-date or to forward-date a document. These procedures aimed to maintain complete privacy of the documents and, therefore, no record-keeping by a third party was required. The concept of cryptographically secured chain of blocks is considered to be the foundation of blockchain

The concept of blockchain itself appeared in 2008, when Satoshi Nakamoto used it to describe the public transaction ledger for the first digital cryptocurrency (Bitcoin). In the research paper entitled "A Peer-To-Peer Electronic Cash System" he described a peer-to-peer system in which people could make instant online transactions directly from sender to receiver without any involvement of any third party like government or financial institutions (Nakamoto, 2008). Since then, blockchain technology, also referred as "Distributed Ledger Technology (DLT) evolved and has been used in different other platforms.

Erbguth and Morin, 2016 in his article stated that Blockchain technology is a distributed data ledger, in which transactions are recorded in append-only mode and verified through consensus algorithms. It is a technological protocol that enables data to be exchanged directly between more participants within a network without the need for intermediaries. Each transaction is codded and added to an unalterable transaction chain, which is distributed to all ledgers (nodes), and thus preventing the alteration of the chain itself. The information relating to each transaction is recorded on a digital ledger, and copies are kept independently by each participant in the network. All the records in the network are unchangeable, time-stamped, encrypted and linked to each other. According to another study by Furlonger and Uzureau (2020) blockchain is "a digital mechanism to create a distributed digital ledger on which two or more participants in a peer-to-peer network can exchange information and assets directly without the need for a trusted intermediary".

What Does This Have to Do with Accounting Work?

Due to time lag, reconciliation, and accounting inclusion, an audit entails conducting processes to acquire audit evidence concerning the amounts and disclosures in the firms at the conclusion of the reporting period. Each half of the project has its own set of records. Blockchain, with their virtually instantaneous supply of a fixed transaction record, allow users to share activity information that are instantaneously synchronised across all devices. This type of information is incorrect transaction rate reconciliation, which aids in the development of ongoing audits. This allows auditors the ability to make a shift from a certain period or year's

performance to a continuous issue, which can now engage both parties in simultaneous transactions.

Auditors can get data in real time and in a consistent, repeatable style thanks to blockchains, which allow transactions and transaction processing to occur concurrently with the function itself. Monitoring in real time instead of exploring (optional) and synchronisation in retrospect is a significant change from the present. Blockchain technology eliminates the need for auditors to cover multiple leagues and eliminates the requirement to submit accounting information in greater detail. This can save a significant amount of time while also reducing the chance of human error. With blockchain technology, accounting data reconciliation cannot be done automatically. In order to appraise the situation as an expert auditor, you'll need experience and information. Considering the strength of this technology combined with Artificial Intelligence (AI), which allows for real-time testing of variants with analytical reviews without the risk of a lack of performance or an auditor's blind spot in information analysis. A ledger system is what blockchain technology is. It's one-of-a-kind because of its consistency and variety, but accountants will recognise it because of its own recordkeeping function. Accounting Blockchain Coalition (ABC), a global federation of blockchain industry professionals in accounting, law, taxation, technology, and higher education that supports accountant blockchain technology, publishes accounting recommendations for digital assets and funds running in blockchain technology. IFAC member organisations, such as the Institute of Singapore Chartered Accountants, the Institute of Chartered Accountants of India, the Institute of Chartered Accountants of England and Wales, CPA Canada, the American Institute of CPAs, and the South African Institute of Chartered Accountants, raise awareness of blockchain technology and digital assets by educating their members and stakeholders, providing insight or guidance in accounting, and conducting research on blockchain and digital assets. Professional knowledge and comprehension of developing technologies, as well as their applications, will be critical for job-related and future preparation.

Cryptocurrency is a small part of the blockchain. Blockchain technology has the potential to be linked to bitcoin and other cryptocurrencies. However, while all cryptoassets rely on blockchain, not all blockchains are cryptoassets-specific. As a result, Blockchain is a digital recorder that stores data. This ladder is distinct in that it does not record or store data in a single spot or in multiple locations. Instead, data is shared over a bigger network of devices. data in a single spot or in numerous locations Instead, data is shared across a broader device network, which means that each device maintains a duplicate of the original data; this data is referred to as a "block," and resources are referred to as a "chain." "Blockchain uses peer-to-peer technology combined with cryptography to ensure that no single block can be modified without causing all prior entries in the chain to be updated." Even if done accidentally, this prohibits unauthorised alterations to the actual data. It's the safest approach to keep track of your activities, because of the technology's flexibility and security. If we want a secure future, we must deploy blockchain. Of course, learning the fundamentals of blockchain is not enough we must also pay for adoption expenses.

Finance, accounting, and auditing are among the most difficult subjects to master, as key projects are likely to change in the near future. Given the flexibility and security of the technology, it will soon be ubiquitous. If we want a secure future we must implement blockchain, of course it is not enough to learn the basics of blockchain - we need to pay for adoption costs. With the exception of manual procedures to computer systems, these

functions have not yet been accomplished, despite the fact that we have previously experienced technology-driven disruptions. The potential for Blockchain to transform accounting, research, and management activities has piqued the curiosity of experts in these sectors.

Although blockchain solutions are widely regarded as one of the most adaptable technologies accessible today, the theoretical underpinning for blockchain solutions remains green, and convincing evidence is almost worthless. Most studies are focusing on the technical features of blockchain because it is currently out of date in terms of growth. There are essentially no blockchain solutions at the corporate level, and most blockchain applications are built as isolated and customised solutions. It will be up to the accountant to ensure that blockchain technology's promises of openness and accountability are kept as it evolves and new and innovative uses become accessible.

How to do it (Method):

Peer review papers and professional writings on the topic are used to write book reviews. Finally, the results of the blockchain census were analysed for the company and its primary stakeholders, which included auditors, banks, and tax authorities. This research is the first step in a larger endeavour to investigate the effects of blockchain technology.

To reach the goal of analysing the use of blockchain technology in accounting, research on blockchain-related topics and their relation to accounting has yet to begin, in order to provide a sense of what possible unions between the two could entail. The research sheds light on how the industry evolves, bolstering the validity of any predictions stated in the text.

After examining the two pillars of historical and current developments, the possible implications can be analysed from the perspective of specific enterprises and their major stakeholders. The relevant analysis will be conducted using a stakeholder approach to attain this goal. Critical arguments will be presented throughout the book to ensure the validity of this thesis. Actors having a vested interest in blockchain technology have a natural tendency to be unduly favourable or subjective in their judgement, which could skew the results of this thesis. As a result, a balanced perspective may be maintained and these risks can be reduced by actively including and analysing criticism.

Literature review

According to Furlonger and Uzureau, blockchain is “a digital mechanism to create a distributed digital ledger on which 2 or more participants in a peer-to-peer network can exchange information and assets directly without the need for a trusted intermediary” (Furlonger, 2020).
Blockchain technology is a distributed data ledger that records transactions in append-only mode and verifies them using consensus techniques (Erbguth and Morin, 2016). It's a technological protocol that allows data to be shared directly between several network participants without the use of middlemen. Each transaction is codified and added to an immutable transaction chain that is transmitted to all ledgers (nodes), preventing the chain from being altered. Each transaction's data is recorded on a digital ledger, with copies kept separately by each network participant. The network's records are all immutable, time-stamped, encrypted, and linked to one another.

Features of Blockchain Technology

(Furlonger, 2020): Blockchain technology combines existing technologies with a novel

architecture characterised by five elements:

Tamper-resistance:

The transactions are permanent, immutable, and time stamped which leads to incorporation of physical protection.

Strong authentication:

With computational logic, the transactions can be generated automatically by using algorithms and rules.

A distributed database:

It provides users with a real-time copy of the ledger, ensuring that each user has a secure copy of all records and updates. This allows complete access to the database and the verification of all transactions without the need for an intermediary.

Decentralization of power:

Instead of requiring a central authority to keep track of information changes, the blockchain uses peer-to-peer transmission, allowing users to keep all of their data on their own systems at all times.

Transparency:

In the block chain, authorised parties may immediately share all records, and users can examine proofs of the data.

Tamper-resistance:

Because the transactions are permanent, immutable, and time stamped, physical protection may be added.

Strong authentication:

Transactions can be produced automatically using computational reasoning.

Flexible and Suspended

The fact that everything is saved in the blockchain exists forever, that the information does not change, and that it cannot be wiped, is a major aspect of the blockchain. The blockchain information provides a level of transparency that has never been seen before. It means that if Person A possesses an object and transfers ownership or value to Person B, a record of Person A's ownership will always exist on the blockchain. It also ensures that the record is unchangeable – no one can alter it. Blockchain technology is often referred to as a "trust machine" because to its high level of consistency.

Isolation is another crucial component of technology. Information is not owned or controlled by a single person, organization, or government. This means that Person A, as well as Person B and the next person, has a copy of all of their information. All participants in the limited environment have access to the same information, and users can choose whether or not to disclose it. Information will no longer need to be compiled and stored on a central website because it will be available everywhere at the same time and, if necessary, under the direct control of the user rather than the service provider. Incidents of misuse of information, cyber-attacks, and burglaries can be lessened, if not totally abolished, as a result of this transition leading to sectarianism.

It's critical to remember that only when all of these elements work together do they provide a transparent and trustworthy environment in which to generate and exchange wealth. However, only a few of these components are used by the majority

of blockchain solutions that have been established or are presently being developed.

Future of blockchain

Despite its ability to produce new value and unlock existing value flows, blockchain is still a developing technology, with current applications focusing on only a few aspects of small-scale businesses. The public's perceptions of blockchain followed an usual trend for new and evolving technologies: they transitioned from "hype" characterised by unreasonable expectations to genuine disappointments brought on by the cryptocurrency crisis in 2018. At the moment, blockchain is in the midst of a "evolving maturity" phase, with the focus on enabling technology for two of its defining components: distribution and encryption.

According to Gartner, in the next ten years, blockchain will go through three phases, with the first focusing on operational improvement and the second on the "real business of blockchain" – reengineering business relationships and redistributing existing data and value flows in ways that could reinvent how businesses engage in a digital world (Panetta, 2019).

After 2012, the first phase began and is projected to last until the early 2020s. Only three of the five elements of blockchain are utilised in this level of Blockchain-inspired solutions: distribution, encryption, and immutability (Zheng et. al, 2017).

Blockchain is confronted with both technical and organisational hurdles during this phase of maturation. While technical obstacles are projected to be resolved by 2025, organisational challenges are expected to be more resilient. Decentralization is one of the most important aspects of a fully developed blockchain solution, which implies that corporate executives must accept complete transparency and be okay with automated business choices that are outside their control. This is a difficult task. Furthermore, the present centralised infrastructure's major intermediaries (market intermediaries, technical infrastructure providers) are continually raising suspicions about unmediated digital asset trading.

The second phase will begin in the early 2020s and will last until 2030. All five elements (distribution, encryption, immutability, tokenization, and decentralisation) are utilised in this phase, known as Blockchain completion. The inclusion of tokens working in a decentralised environment using smart contracts distinguishes this solution from blockchain-inspired systems.

The integration of supplementary technologies into blockchain networks is the hallmark of the third phase, which is scheduled to begin after 2030. Internet of Things (IoT), Artificial Intelligence (AI), and Self-Sovereign Identity (SSI) will increase the amount of value that can be monetized and traded in the network, enabling for more small transactions to be facilitated by smart contracts. This Enhanced Blockchain has the ability to create new business models based on a decentralised operational structure that allows for entirely autonomous transactions. Education, economy, politics, healthcare, and research are all examples of human undertakings that could be redesigned. The sixth disruptive computer paradigm change is proving to be blockchain (Mutambaie, 2018).

Blockchain accounting

Blockchain is clearly an accounting technology, with its major goal of transferring asset ownership while ensuring a ledger of correct financial information in a secure and trusted setting. As a result, blockchain is likely to alter the current accounting system in a variety of ways. While both researchers and accounting professionals agree

that blockchain technology has the potential to disrupt the accounting profession, it is yet unclear how these transformations will take place, what problems and risks they will face, and how they will affect the accounting profession.

All of these concerns are also present in the audit system and profession. Although many research on the blockchain disruptive effect look at accounting and auditing as a single system, this study just looks at the accounting system. We believe that, despite their similarities, accounting and auditing systems have unique characteristics that will distinguish the potential impact of blockchain on them.

The potential of blockchain for accounting

The blockchain technology gives a new way to categorise and account for data. The blockchain's shared recordkeeping feature allows the "trust" factor in many connections to be defined by consensus rather than promise. 2018 (McComb & Smalt)

The blockchain provides transparency and clarity regarding asset ownership, history, and the existence of obligations. This will free up a significant amount of time for accountants and minimise the costs of keeping and reconciling registers, resulting in increased efficiency. Furthermore, with recordkeeping moved to the blockchain, there will be more resources available for planning and appraisal.

Blockchain accounting can manage new forms of assets that are difficult to measure in a standard accounting system. Transactions of digitised or digitalized assets will be automatically recorded in cryptographically secured blocks as technology advances to upgraded blockchain systems. The blockchain might potentially record and make settlements on the maturity of various assets based on smart contracts. This real-time blockchain accounting is currently seen as the accounting system of the future. Blockchain accounting's benefits, drawbacks, risks, and prospects

-Improved productivity. Records are only kept once, in blocks that can be accessed by any authorised user at any time. The cost of maintaining physical or digital documents will be reduced as a result. Reconciliations will be eliminated from the recording process since transactions are recorded in real time and ledgers are updated promptly. In an improved blockchain system, contemporary technology such as Artificial Intelligence and Data Analytics will optimise numerous accounting operations. All of these will improve the accounting function's efficiency and value.

-Information authenticity and fraud minimization Blocks in a blockchain, unlike physical or digital documents, are impenetrable to unauthorised changes. This will assure the accuracy of information kept in the blockchain and reduce the risk of fraud significantly. Any chance of errors will be completely eliminated in real-time blockchain accounting.

- Reporting in real time. In a real-time blockchain accounting system, every network user or external regulator will have real-time access to information about a company.

- Pay attention to activities that bring value. All of an organization's resources used in traditional record keeping will be available to the organization's other value-adding activities in blockchain accounting.

All of these potential blockchain accounting improvements are exciting, but they also raise worries about the accounting system. Being a solution based on "unquestionable" trust secured

by line codes and computers, it is nonetheless difficult to be fully accepted by a system where trust is built by human validation and maintained by tight laws. Blockchain is a new generation of technology that redefines trust (Sachs, 2018).

Furthermore, both the process of transitioning from traditional accounting systems to blockchain accounting systems, as well as the latter itself, are fraught with technical and organisational obstacles.

The infrastructure for blockchain is one of the most significant difficulties (Zheng et al, 2018). Because blockchain is so reliant on the Internet, the risk of a faulty infrastructure must be carefully evaluated. A high level of cybersecurity is essential in this situation.

Another difficulty is from the fact that accounting is heavily reliant on regulations. Although blockchain technology can ensure that these rules are followed, it should be flexible enough to allow for the adoption of new rules or the modification of current ones in real time.

Another problem for the accounting blockchain is the scale with which it is embraced by enterprises. Blockchain accounting must be embraced by a substantial number of firms in order to be effective (Inghirami, 2018). Enterprise blockchain solutions are still in their early stages, and the number of companies that have tried experimenting with blockchain in accounting is modest.

Implications for the Accounting profession

Certainly, blockchain will transform the accounting profession-accountants' work will shift away from bookkeeping and reconciliation and toward other value-added tasks such as judgement and advise. Although accountants may be concerned about measuring rights and obligations from transactions in relation to blockchain, this technology may help to improve the financial profession by shifting focus away from bookkeeping and toward more value-added subjects like planning and valuation, integrated analysis and complex interpretation of various outcomes, and data system assessment. Accountants will have to evaluate the true economic meaning of blockchain records by comparing them to economic reality and valuation.

Another crucial consideration is the role that accounting is permitted to play in the development and use of blockchain technology. Accountants are knowledgeable in all aspects of the blockchain model, including standard-setting, business logic, record-keeping, and the implementation of complex regulations (Smith, 2018). As a result, they, along with individuals who have technical knowledge of how blockchain works, should be involved in the "business" design of various blockchain solutions. Accountants can help companies that are contemplating blockchain technology by acting as consultants. They should function as a link between technologists and business stakeholders in the blockchain adoption process, as well as provide advice on the impact of blockchain on their companies and clients.

Conclusion

In this paper, we provide a complete review of blockchain and its potential to improve accounting activity in this article. This topic, according to our research, is still in its infancy. Blockchain is one of the most transformative technologies accessible today, but it will take more than technical advancements to realise its full potential. While challenges like as scalability, latency, privacy, security, and authentications are widely acknowledged as key roadblocks on the blockchain maturation route, organisational and human issues remain largely unaddressed. These, on the other

hand, are essential for adopting a blockchain solution at the corporate level.

Blockchain technology will become an intrinsic component of the information technology ecosystem as theoretical applications progress to successful proof of concept results. Without a question, it will have a huge impact on the financial sector, with financial accounting being one of the most difficult areas to deal with. Blockchain has the ability to greatly expand accounting data while also reducing accounting errors in disclosure and earnings management. In addition, the job of financial accountants will be altered. They will be expected to validate both the source documents and the reasonability of smart contracts used in accounting blockchain, rather than to record transactions and prepare financial statements.

Accounting and auditing professional groups are well aware of this possible impact and are conducting extensive research into it. However, it appears that for the vast majority of accountants, blockchain remains a "exotic" technology mostly associated with cryptocurrency. As a result, companies not only jeopardise their prospects of fully utilising blockchain accounting, but they also miss out on a once-in-a-lifetime opportunity to contribute in the development of blockchain solutions for their clients.

These findings lay the groundwork for a future study that will examine accounting professionals' opinions and responses to blockchain and its implications for accounting systems.

(Irina Bogdana Pugna, 2020) (Irina Bogdana Pugna, 2020)

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