

THE RISE OF BLOCKCHAIN ACCOUNTING: PIONEERING FINANCIAL INNOVATION

Dr. P. MOHAN MCom, MPhil PGDBA PHD

Vasavi Jnana Peetah Evening College, Vijay Nagar, Bengaluru... 40

ABSTRACT

Blockchain Accounting has gained a lot of importance despite being a polarizing technology and an elusive concept for many. Some people love it, hate it, or don't understand it at all. Whatever be the stance, it's hard to ignore the growing number of organizations accepting blockchain. This has made blockchain accounting an emerging topic, especially for those in the accounting profession. Big accounting firms like Deloitte are already educating on blockchain accounting. Though mainstream adoption isn't happening any time soon, it's becoming increasingly important to understand how blockchain technology can change many aspects of accounting and auditing profession. The main object of this paper is to provide an insight into the awareness of blockchain technology in India to be used by accountants and auditors as an effective weapon for fraud detection and fraud prevention.

Key Words: Blockchain Accounting, Technology, Errors and Frauds, Accounting Profession, Auditing.

I. INTRODUCTION

A blockchain is a digital ledger created to capture transactions conducted among various parties in a network. It is a peer-to-peer, internet-based distributed ledger which includes all transactions since its creation. All participants (individuals or businesses) using the shared database are "nodes" connected to the blockchain, each maintaining an identical copy of the ledger. Every entry into a blockchain is a transaction that represents an exchange of value between participants (i.e., a digital asset that represents rights, obligations or ownership). Blockchain is a decentralized, distributed ledger that focuses on the ownership and transfer of assets. It records transactional data in a way that's almost impossible to manipulate. Blocks of transactional data connect in chronological order. The chain of blocks gives the technology its name. The blockchain database records the data of organizations and individuals across the world. In practice, many different types of blockchain are being developed and tested. However, most blockchains follow this general framework and approach. A properly functioning blockchain is immutable despite lacking a central administrator. As a near real-time and distributed digital ledger, a

blockchain has several unique and valuable characteristics that, over time, could transform a wide range of industries. Few such characteristics are as follows:

Near real-time settlement: A blockchain enables the near real-time settlement of transactions, thus reducing the risk of non-payment by one party to the transaction.

Distributed ledger: The peer-to-peer distributed network contains a public history of transactions. A blockchain is distributed and highly available and retains a secure record of proof that the transaction occurred.

Irreversibility: A blockchain contains a verifiable record of every single transaction ever made on that blockchain. This prevents double spending of the item tracked by the blockchain.

Censorship resistant: The economic rules built into a blockchain model provide monetary incentives for the independent participants to continue validating new blocks. This means a blockchain continues to grow without an “owner.” It is also costly to censor.

Blockchain technology has the potential to replace the 500-year-old double-entry accounting system. Blockchain distributed ledger technology would popularize the triple-entry accounting system. A General Ledger includes all the assets, liabilities, equity, expense, and income ledgers, which make up a complete set of the financial transactions records. In a double-entry accounting system, a debit and a credit of the same amount are recorded at the same time. In a triple-entry accounting system, a debit, credit, and a third entry is recorded. The third entry would be on the blockchain. Standard accountancy requires a significant time investment from all organizations in the supply chain. Businesses keep their own ledger to ensure business’ financial records are accurate and compliant. This process is also susceptible to human error.

II. REVIEW OF LITERATURE

Numerous studies have been done on the subject at the national as well as international level. Some of which are as follows:

Atanasovski, Trpeska & Lazarevska (2023) their research analyzed the technology's disruptive potential for current accounting information systems and accounting practitioners. They explored the overall benefits and impact of blockchain technology in accounting and auditing, as well as the

consequences for professional careers. The most key benefits are improved accounting information trust and reliability, a continuous more efficient and effective audit of financial statements, and a decreased risk of financial statement fraud. Despite the obvious advantages, they addressed the technology's primary problems, also as scalability, interoperability, confidentiality, and security.

Bizarro, Garcia, & Moore (2022) they stated in their analysis that the Blockchain is an opportunity, not a threat and that forthcoming accounting and auditing services will almost certainly contain some blockchain consideration. They described a few of the products in the marketplace that attempt to integrate blockchain technology. Blockchain still is relatively new, and software development is somewhat vibrant; moreover, they mentioned some of the products available in the market that tries to incorporate blockchain technology.

CpaCanada, et al. (2021) in their investigation talked about a blockchain is a type of database used to register transactions through a distributed system. All participants such as individuals or companies using the shared database are “nodes” connected to the blockchain, each keeping an identical copy of the ledger. Each entry into a blockchain is a transaction that represents a value change between participants. In practice, many varied types of blockchain are being developed and examined. Nevertheless, most of blockchain track this common frame and approach.

Bansal, Batra, & Jain (2020) talked about the fundamentals of blockchain technology and how it affected accounting and auditing. They claimed that these new technology transaction tools provide the most chances for change in various accounting mechanisms, as well as establishing a new platform to restructure the business world and alter the accounting and auditing profession. Its potential impact on the accounting field should not be underestimated. Various prior innovations, such as the introduction of computers, ERP systems, and cloud computing, have just altered the auditing profession rather than rendering it redundant. Auditors will need to adopt a more data-centric approach that is focused on the future rather than the past.

Nakamoto and Bystrom,(2019) in their examination centered about the Bit coin which is a cash-like currency and offers a way to exchange property at peer to peer, is not based on a central clearing house such as financial institution. Instead, each ancient bit coin operation is stored in a globally distributed digital ledger called blockchain that follow entire bit coin transaction historically.

III. OBJECTIVES OF THE STUDY

1. To highlight the potential advantages of blockchain accounting.
2. To find out the potential effects of blockchain technology in accounting and auditing profession.
3. To explore the awareness of respondents regarding blockchain technology.
4. To study the opinion of respondents about different aspects of blockchain technology in accounting and auditing.

ADVANTAGES OF BLOCKCHAIN TECHNOLOGY IN ACCOUNTING

Blockchains can be useful for accounting. The practice of recording accounting transactions follows the double-entry system, where assets are equated with liabilities and expenses. Each debit entry can be matched with a corresponding credit entry in the ledger. With blockchains, companies can manage double entries easily. Here are a few potential benefits of blockchain accounting:

- (i) **A joint ledger for all:** Blockchain accounting provides a way for every member in an organization to directly record entries in the ledger through their personal computers. Transactions can be recorded offline and can be updated later when required. Using a distributed ledger also means that everyone can access the entire ledger without needing to keep any information in separate databases.
- (ii) **High levels of control and automation:** In any accounting system, control levels are important in designating rights to operational team members. Blockchains allow automatic consensus for transaction entries, which can be controlled by different node levels. This degree of automation allows organizations to set different control levels for staff members, which can then be used to distribute workloads across cross-functional teams. Some reconciliation tasks can be completely automated to eliminate the need for manual entries, while other tasks can be approved only by active nodes that belong to members with higher authority.
- (iii) **Continued operations:** Because blockchains are distributed systems, a blockchain accounting system ensures that accounting processes within a company can continue to operate with a few computers down. This is a big advantage over a centralized accounting database that requires maintenance shutdowns, occasionally causing a break in operations.

- (iv) **Customized transaction protocols:** Many second-generation blockchains have provisions for adding computer code into the network protocol that allows the network to execute tasks when specific conditions are met automatically. This feature has been the backbone for smart contracts, but its applications in accounting are not to be ignored. Organizations can employ developers to write algorithms to automatically execute accounting functions. Tasks like periodic amortization, discounted cash flows, risk assessments, and inventory thresholds in designated ledgers can be easily automated. This can be vital for automating business processes and improving company efficiency.
- (v) **Increased transparency:** Blockchain ledgers can be viewed by everyone in the organization. This transparency in blockchain works well for teams working in collaborative environments. Entries made by executive staff can be viewed by board members (and vice-versa) in real-time. This, in turn, can help managers and their teams in making timely decisions.
- (vi) **Tamper-proof ledgers and secure backups:** Blockchains keep records in blocks. Both blocks and the records contained within them are linked through timestamps. This makes the blockchain an immutable record of transactional or operational events. Since the transaction record is also distributed across multiple computers, it is backed up, often with multiple copies stored across the network. All of the blocks and transactions are encrypted, adding another layer of security to the blockchain data. So it's quite difficult for users to tamper with transaction records kept in the blockchain. Employers can worry less about employees making errors or unauthorized changes to accounting transactions. And they can feel confident about having backups of their entire accounting database.
- (vii) **Historical data for auditing and reporting:** Accounting is almost synonymous with audits. After all, it's what accounting firms do. Timestamped data is the perfect ingredient for a historical look at transactions in an audit to check for unusual events. Auditors can look at exact dates for different incoming and outgoing payments with the help of blockchain ledgers.
- (viii) **Scalability:** Central databases often require significant hardware investments when scaling up their capacity. That makes it very expensive to upgrade in order to meet high workloads. Blockchains can be configured to distribute workloads across large networks, some of them which are accessible to the public. This is also known as horizontal scaling, allowing the network to optimize workloads with servers to process workloads efficiently. The high

scalability helps accounting teams to quickly record and close transactions while maintaining a good customer experience.

IV. POTENTIAL EFFECT OF BLOCKCHAIN TECHNOLOGY ON ACCOUNTING AND AUDIT PROFESSION

There are three key aspects of blockchain that can affect the accounting industry.

Smart contracts: A smart contract is one of many blockchain applications that can streamline tedious tasks in today's accounting. With smart contracts, transactions automatically go through when certain conditions are met. This helps accounting professionals and organizations automate jobs like payroll and reconciliations. This would save organizations on costs linked to manual entry errors such as administrative expenses. This application also helps clients and organizations against scams and fraud. A smart contract is one of many blockchain applications that can streamline tedious tasks in today's accounting. With smart contracts, transactions automatically go through when certain conditions are met. This helps accounting professionals and organizations automate jobs like payroll and reconciliations. This would save organizations on costs linked to manual entry errors such as administrative expenses. This application also helps clients and organizations against scams and fraud.

Decentralized, Distributed Ledger Technology: One of the first popular blockchain applications was that it cut out the middle man when transferring money. For example, one can send money peer-to-peer (P2P) without having to go through a credit card processor or bank. Although the middle man slows down transactions and adds fees for their services, they're not all bad. The middle man plays a large role in protecting both parties in the exchange of assets from fraud. Blockchains maintain this security with public witnesses called miners. Miners replace a central authority's role in verifying transactions. This is done securely using a consensus protocol, or a set of rules based on mutual agreement. Blockchain's decentralized nature also helps to act as proof that a transaction happened.

Easily verifiable financial records: In the past, paper receipts were used for proof that a transaction occurred. Paper receipts were relatively hard to tamper with. With the introduction of digital payments came digital receipts, which are easier to tamper. Blockchain tech is again a promising solution to this problem. Blockchain's immutable nature comes from the fact that once a public consensus validates a transaction into the blockchain, it's virtually impossible to alter or delete the transaction. If an organization modifies a transaction's data in the blockchain, it'll affect the hash value. This will be an

immediate red flag that someone tampered with the data. Passwords commonly use hashes too. A hash value is basically a generated string of characters. It protects the sensitive data of the transaction and acts as a receipt that verifies the transaction occurred at a certain time.

Blockchain accounting doesn't seek to replace traditional accounting nor accountants. Instead, it aims to impact accounting workflows associated with the traditional accounting profession and record keeping. There'll still be gaps where traditional accounting will be important. Blockchain in accounting will help accountancy firms and accounting professionals, particularly auditors, with business audits. Since a large part of audit is verifying the occurrence and accuracy of financial records, this would free up a lot of time for the accounting professional to focus on other things. Blockchain technology will reduce the need to follow paper trails as the blockchain would be enough to prove many parts of a traditional audit.

It is sometimes said that blockchain technology might eliminate the need for a financial audit by a CPA auditor. While verifying the occurrence of a transaction is a building block in a financial statement audit, it is just one of the important aspects. An audit involves an assessment that recorded transactions are supported by evidence that is relevant, reliable, objective, accurate, and verifiable. The acceptance of a transaction into a reliable blockchain may constitute sufficient appropriate audit evidence for certain financial statement assertions such as the occurrence of the transaction (e.g., that an asset recorded on the blockchain has transferred from a seller to a buyer). Recording a transaction in a blockchain may or may not provide sufficient appropriate audit evidence related to the nature of the transaction. In other words, a transaction recorded in a blockchain may still be:

- Unauthorized, fraudulent, or illegal
- Executed between related parties
- Linked to a side agreement that is "off-chain"
- Incorrectly classified in the financial statements

Furthermore, many transactions recorded in the financial statements reflect estimated values that differ from historical cost. Auditors will still need to consider and perform audit procedures on management's estimates, even if the underlying transactions are recorded in a blockchain.

Widespread blockchain adoption may enable central locations to obtain audit data, and CPA auditors may develop procedures to obtain audit evidence directly from blockchains. However, even for such

transactions, the CPA auditor needs to consider the risk that the information is inaccurate due to error or fraud. This will present new challenges because a blockchain likely would not be controlled by the entity being audited. The CPA auditor will need to extract the data from the blockchain and also consider whether it is reliable. This process may include considering general information technology controls (GITCs) related to the blockchain environment. It also may require the CPA auditor to understand and assess the reliability of the consensus protocol for the specific blockchain. This assessment may need to include consideration of whether the protocol could be manipulated.

As more and more organizations explore the use of private or public blockchains, CPA auditors need to be aware of the potential impact this may have on their audits as a new source of information for the financial statements. They will also need to evaluate management's accounting policies for digital assets and liabilities, which are currently not directly addressed in international financial reporting standards. They will need to consider how to tailor audit procedures to take advantage of blockchain benefits as well as address incremental risks.

V. ANALYSIS

(a) Data Source: The study is based on primary data which was collected through opinion survey through a closed-ended structured questionnaire which has 10 close ended questions. The questionnaire has been circulated through various social media platform via mail, WhatsApp, Facebook etc. among academicians and researchers. 50 filled questionnaires were received through various sources. The period of study was 2022.

(b) Methodology: The questions were analyzed with descriptive statistics. For collection of data, 5 points Likert scale (5 being strongly agree, 4 being agree, 3 being neutral, 2 being disagree and 1 being strongly disagree) has been used to analyze the opinion regarding different aspects of blockchain technology. The statistical techniques like mean, median & Standard Deviation, were used for analysis.

Descriptive statistics of opinion of respondents regarding benefits of blockchain technology in accounting and auditing: Table-1

Q No.	Question	Mean	Median	Standard Deviation
1	Do you consider Block Chain Technology as a secured record of proof for accounting transactions?	4.1	5	1.266
2	Can Block Chain Accounting reduce cost of maintenance of books of accounts by replacing manual labour?	4.14	5	1.143
3	Can Block Chain Technology increase the transparency between internal and external users?	3.98	5	1.22
4	Can Block Chain Accounting reduce the possibility of errors and frauds in accounting?	4.22	5	1.13
5	Do you think that Block Chain Technology can be used as a tool to detect and prevent white-collar crimes?	4.26	5	1.103
6	Can Block Chain Technology enable direct access of transactions without third party involvement?	3.44	3.5	1.343
7	Can Block Chain Technology enable non-reversible transactions to upgrade accounting system?	3.76	4	1.222
8	Will introduction of Block Chain Technology redefine the functions of accountants and auditors?	4.06	5	1.268
9	Should there be any institutional as well as regulatory guideline for introduction of such technology?	2.84	2.5	1.49
10	Do you think that such technology will be suitable for any business irrespective of its size?	3.06	3	1.15

Table-2: 5- Point Likert Scale Range

Result	Range
Strongly Disagree	1.00-1.80
Disagree	1.81-2.60
Neutral	2.61-3.40
Agree	3.41-4.20
Strongly agree	4.21-5

Table-3

Question No.	Decision by Mean	Decision by Median
1	Agree	Strongly Agree
2	Agree	Strongly Agree
3	Agree	Agree
4	Strongly Agree	Strongly Agree
5	Strongly Agree	Strongly Agree
6	Agree	Agree
7	Agree	Agree
8	Agree	Strongly Agree
9	Neutral	Disagree
10	Neutral	Neutral

(c) List of Findings:

- (a) Block Chain Technology can be considered as a secured record of proof for accounting transactions.
- (b) Block Chain Accounting can reduce cost of maintenance of books of accounts by replacing manual labour.
- (c) Block Chain Technology can increase the transparency between internal and external stakeholders.
- (d) Block Chain Accounting can be used to reduce the possibility of errors and frauds in accounting.
- (e) Block Chain Accounting can be used as a tool to minimize the occurrence of white-collar crimes in the organization.
- (f) Block Chain Technology can enable direct access of transactions without third party involvement which will definitely be a time and cost saving tool.
- (g) Block Chain Technology can enable non-reversible transactions to upgrade accounting system which will be helpful for accountants and auditors.
- (h) Block Chain Technology can redefine the functions of accountants and auditors and in future their service dimension can change.
- (i) No definite views are available regarding whether there should be any institutional as well as regulatory guideline for introduction of such technology.

(j) Acceptance of blockchain technology irrespective of size of business is still doubtful as respondents are not sure about its acceptability in each business.

CONCLUSION

There are still many unknowns with respect to how blockchain will impact the audit and assurance profession, including the speed with which it will do so. Blockchain is already impacting CPA auditors of those organizations using blockchain to record transactions and the rate of adoption is expected to continue to increase. However, in the immediate future, blockchain technology will hopefully not replace financial reporting and financial statement auditing. Financial statements reflect management assertions, including estimates, many of which cannot be easily summarized or calculated in a blockchain. Furthermore, the process of an independent audit of financial statements enhances the trust that is crucial for the effective functioning of the capital markets system. Users of financial statements expect CPA auditors to perform an independent audit of the financial statements using their professional skepticism. CPA auditors conclude whether they have obtained reasonable assurance that the financial statements of an entity, taken as a whole, are free from material misstatement, whether due to fraud or error. A blockchain is unlikely to replace these judgments by a financial statement auditor. CPA auditors need to monitor developments in blockchain technology—it will impact clients' information technology systems. The auditing profession must embrace and "lean in" to the opportunities and challenges from widespread blockchain adoption. CPA auditors and assurance providers are encouraged to monitor developments in blockchain technology because they have an opportunity to evolve, learn, and capitalize on their already proven ability to adapt to the needs of a rapidly changing business world. Whether blockchain technology can supplement the functions and domain of accounting & auditing profession or will replace it, is an important future concern.

REFERENCES

- (i) Atanasovski, A., Trpeska, M., & Lazarevska, Z. B. (2020). The limitations of Blockchain technology as for true disruptiveness of accounting and assurance. *Journal of Applied Economic Sciences*, 15, 738-748.
- (ii) Bizarro, P. A., Garcia, A., & Moore, Z. (2019). Blockchain Explained and Implications for Accountancy. *ISACA Journal*, 1.

- (iii) Alarcon "John", J.L. & Ng, C. (2018). Blockchain and the Future of Accounting. CPA Journal, Vol. 88(4) PP.26-29.
- (iv) Aslan, U. & Turun, C.Ş. (2018). New Trends in Economics and Administrative Science International Congress on Economics and Administrative Science (pp.2559-2568).
- (v) CpaCanada (2018), Blockchain Technology and Its Potential Impact on the Audit and Assurance profession. <https://www.cpacanada.ca/en/business-and-accounting-resources/audit-and-assurance/canadianauditing-standards-cas/publications/impact-ofblockchain-on-audit>.
- (vi) Hambiraloyic, M & Karlsson R. (2018). Blockchain Accounting in triple entry system.
- (vii) ICAEW (2018). Blockchain and the future of accountancy. [https://www.icaew.com/-/media/corporate/files/technical/information technology / t e c h n o l o g y / b l o c k c h a i n - a n d - t h e - f u t u r e - o f - a c c o u n t a n c y . a s h x](https://www.icaew.com/-/media/corporate/files/technical/information%20technology/blockchain-and-the-future-of-accountancy.ashx)
- (viii) Bansal, S. K., Batra, R., & Jain, N. (2018). Blockchain the Future of Accounting. The Management Accountant. 53(6), 60-65.
- (ix) Dai, J. & Vasarhelyi, M.A. (2017). "Toward Blockchain-Based Accounting and Assurance". Journal Of Information Systems, 31(3), 5-21. DOI: 10.2308/isys-51804
- (x) Simoyama, F.O.; Grigg, I.; Bueno, R.L.P & Oliveira, L.C. (2017). "Triple Entry Ledgers With Blockchain For Auditing" International Journal of Auditing Technology, 3 (3), 163-183.
- (xi) Vardia, S; Singh, H (2022). "Adoption of Blockchain Technology in Accounting and Auditing: Benefits and Challenges". Pacific Business Review (International),95-103,