

# Blockchain Revolution: Transforming the Accounting Landscape

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**Abstract:** *The Digital boom during the past decades and the exponential growth of Internet services have changed how accounting was done earlier. Accounting software like Tally, Zohobooks, and Quickbooks has greatly reduced the burden accountants face while preparing accounts and detecting errors. Continuous technological advancements have made it even easier; businesses that previously hired/purchased accounting services and software are cutting their costs by taking advantage of cloud service providers. Blockchain is the new buzzword of Web 3.0. This paper focuses on understanding Blockchain technology, its impact on the accounting profession, the advantages of incorporating it, and the flaws associated with adopting this Web 3.0 sensation. There are some notions, like robots will take the job of accountants, in the future only people with the know - how of accounting software will be hired, degree or certificate of accounting knowledge will lose their relevance, etc. I have also tried to verify these claims in the study.*

**Keywords:** Blockchain Technology, Distributed Ledger Technology, Decentralized Network, Cryptographic Hashing

## 1. Introduction

Change is the only constant; like everything else, accounting practices and techniques keep changing over time. Accounting is no longer tedious paperwork requiring accountants to manually record, classify, analyse and interpret business transactions. Like various other activities, Tax and accounting landscapes are also being digitalised. The accounting professional is responsible for maintaining and analysing financial records. Traditionally, this work is done manually, and accountants struggle with lots of data and mathematical calculations. But thanks to digitalisation and internet technology, now accountants with knowledge of accounting software can save a lot of the time and energy they use in repetitive jobs like tax preparation, salary payment, payroll, etc., and divert it to more value - adding jobs. The accountancy profession is undergoing radical change due to numerous changes in technology, society, and work culture. The advent of computerised accounting has changed the way of keeping financial records. Now, the transactions are recorded in the software at particular places based on their nature, and the software/program automatically makes necessary adjustments in the concerned accounts.

Today, we are undergoing many generation - defining challenges, like the COVID - 19 pandemic, worsening social and economic inequality, cross - pollination of cultures, and a revolution in information and communication technologies. These changes have led the stakeholders to demand that accountants inculcate necessary changes and make requisite improvements in bookkeeping and accounting methods. Cloud computing, blockchain technology, robotic process automation, artificial intelligence, and machine learning have facilitated accounting professionals working from home and collaborating with peers. As a result, the accounting profession stands still even in times of global crisis.

Technology is changing industry 4.0 in every sphere by brilliantly responding to stakeholders' expectations. BOTS, AI, Machine learning, and Blockchain will make accounting

more fun and attractive and provide more accurate and faster analysis and predictions compared to traditional accounting.

As the BOTs are never tired or bored and AI is useful for error - free manual processes, it will help accountants devote more time and attention to valuable consultative work in the organisation than repetitive clerical work.

However, there is another perspective towards introducing Blockchain technology in accounting. Particularly, the professionals view it as a threat to the profession; they fear that the robots will take their jobs, degrees or certificates in accounting will lose their relevance, and only those with knowledge of accounting software and technology will be appointed accountants. Their fear is not justifiable because blockchain will not change the accounting system; it will only support the existing system by reducing the repetitive, time - consuming tasks of the accountants.

## 2. Literature Review

(Sharma et al., 2022) Their work titled 'Adoption of Blockchain Technology Based Accounting Platform' investigated various deciding factors that affect adopting Blockchain technology in accounting. She found that security and privacy, audibility and immutable character, better transparency, cost reduction, real - time transaction, and flexibility are the factors most influencing the adoption of blockchain technology. The researcher also discovered that the Quorum, Sap Hana, and Ethereum platforms are the most consistent and trusted platforms for blockchain technology.

(Zheng, 2021) In their research paper, 'Applications Research of Blockchain Technology in Accounting System,' they conclude that if blockchain technology and Internet of Things technology are combined, it can help strengthen the management of physical assets in accounting and can also provide a technical guarantee for the consistency between accounts and reality.

(Demirkan et al., 2020) The researchers performed research titled 'Blockchain technology in the future of business cyber security and accounting'. In their work, the researchers inferred that Blockchain could effectively be a very impactful new part of accounting and play a crucial role in auditing, Big Data, and policy - making areas. Due to all these emerging technologies, the typical accounting job will face a lot of changes in the future years, and these changes are disruptive yet open to many potential opportunities in the profession.

(Vijai et al., 2020) In their paper 'The Blockchain Technology And Modern Ledgers Through Blockchain Accounting,' they discuss the future of blockchain accounting and state that it will allow for the smooth and real - time transacting and securing of digital data, resulting in efficiency in business transactions. Stockholders might benefit from lower trading costs, quick transfers, more accurate records, and transparency of the entire accounting process.

(Killi, 2019) Research to explore 'The Effects of Blockchain Technology on Accounting and Auditing Profession'. Their work found that blockchain can be a reliable ledger for a company's accounting records. The most important potential impact of blockchain on audit activities is increased efficiency and effectiveness. The blockchain's security, validity, and clarity will facilitate the auditor's tasks and ensure the audit is performed in real - time. He further stated that businesses must apply new policies and standards compatible with blockchain technology.

### Objectives of the Study

- To know about the uses of blockchain technology in the accounting domain.
- To describe the advantages of using blockchain technology in business organisations.
- To highlight the upcoming challenges in installing blockchain technology in the business for accounting and auditing.

## 3. Theoretical Framework

### Blockchain Technology:

Blockchain technology is one of the greatest innovations of the twenty - first century. While Bitcoin and other cryptocurrencies are the most famous examples of blockchain usage, this "distributed ledger technology" (DLT) finds a broad range of usage. (Vijai et al., 2020) <sup>6</sup> "Blockchain is a shared, immutable ledger that facilitates recording transactions and tracking assets in a business network".<sup>3</sup> It eliminates the requirement for a central agency to validate the transactions. Data and information are stored in blocks protected against threats using a cryptographic algorithm. Blocks are linked, making it a chain of blocks, that is, a shared ledger stored at different nodes in the network. Businesses need information as and when needed to make fast and accurate decisions. Blockchain is ideal for this purpose. The information stored in immutable ledgers in the blockchain can only be accessed by permission network members. A blockchain network can track accounts, orders, payments and production.

Blockchain is a landmark innovation in accounting. It is concerned with maintaining a ledger of accurate financial

information and transferring ownership of assets. According to the reputed technological and consultancy firm Gartner, by 2022, many new innovative companies will start using Blockchain technology, and at least one business will be created using Blockchain technology worth \$10 billion.<sup>6</sup> (Rašević, 2007) . ScienceSoft, EvaCodes, Ripple Labs Inc., LeewayHertz, and Blockchangers are some of the most popular blockchain developers making revolutionary changes in the accounting and auditing business worldwide.

### Adoption of blockchain technology by Indian Companies

Initially developed in 2009 to serve as a public ledger for the Bitcoin network, Blockchain has become a sensation in the past couple of years. Today, it is used for different purposes, serving multiple sectors worldwide. 2020 the global blockchain market size was estimated at \$3 bn. It is expected to grow at an impressive CAGR of 67.3% and will reach \$39.7bn by 2025.<sup>4</sup> (*Blockchain: Powering India's Technological Transformation*, n. d.) . NITI Aayog, a think tank for India's policy and strategy making, hosted the country's first blockchain congress in Hyderabad on 4 - 5 August 2019, aiming to attract investors and innovators towards this state - of - the - art technology for accounting and auditing. In India, blockchain technology has been accepted well in the banking, insurance, and financial service industries. But still, we account for only 2% of the Blockchain startups. This shows that while the technology is being well received, it is at a very nascent stage in our country <sup>5</sup> (*Blockchain: Powering India's Technological Transformation*, n. d.)

### The Different Types of Blockchains

Primarily, there are three types of blockchains -

- 1) **Public blockchains:** A public blockchain is a decentralised platform where anyone can read, write, and participate. It does not require permission to access the data (Sharma T. K., 2019). Little or no privacy and weaker security are the major concerns for blockchains' enterprise use cases.
- 2) **Private blockchains:** A private blockchain network is similar to a Public Blockchain network as it is also a decentralised peer - to - peer network. However, in the case of a Private Blockchain network, one party governs the network and controls who can participate in the network. It is a members - only network. (Sharma T. K., 2019)
- 3) **Consortium blockchain or Federated Blockchains:** Several organisations can share the responsibility of maintaining a blockchain; these organisations determine who can submit a transaction or access the data.

### Evolution of Accounting: From single entry system to triple entry System

The history of accounting can be traced back to Mesopotamian civilisation; a single - entry system of recording transactions was followed for many centuries, but as the size of businesses grew, the complexities of accounting grew too, and the double - entry system of accounting came into practice; it was based on the foundation of Assets = Liabilities + Equity, this system of accounting is in practice all around the world. The traditional accounting system comprises the financial records in ledgers maintained by the accountants working for the entity and relies on a third party

for the reconciliation. Blockchain, or distributed ledger technology (DLT), is probably the simplest definition of blockchain. "In conventional accounting, records are stored in a centralised location, be it a collection of spreadsheet files or the database of an accounting software application" (<https://igniteoutsourcing.com/2019>)

Due to distributed ledger technology, blockchains will eliminate the need to enter accounting information into multiple locations and possibly eliminate the need for auditors to reconcile different ledgers. This will significantly reduce the time used to maintain accounts and the chances of human error.

AI - enabled Tax and accounting systems save time and provide deep insights into business patterns. AI can help forecast almost accurate financial statements. Machine learning can be of great help to managers in predicting future trends based on previous records. With AI, accountants' tasks like banking, audit, and payroll have become automated. With Robotic Process Automation (RPA), also called software robots, employees can free themselves from repetitive, mundane jobs. They can invest their energy in strategic and advisory services, adding more value to the business. Tedious and time - consuming accounting tasks like tax preparation, auditing, and payroll making are becoming fully automated. For instance, popular software vendors, such as Intuit, OneUp, Sage, and Xero, offer automated data entry and reconciliation options using AI and machine learning technologies in the company. According to Forbes, the application of AI to create self - learning systems continues to be integrated into accounting tasks; technological systems will take on repetitive and time - consuming jobs.

Auditing requires the confirmation of transactions and balances on the firm's accounting ledgers at the end of the reporting period. Blockchains almost immediately synchronise shared transaction information across all locations. Such a provision of information removes transaction - level reconciliations and facilitates developing continuous auditing. Each side of the transaction keeps its record. This paves the way for a new way of auditing because recording and settlement of transactions co - occur with the transaction itself, and auditors may obtain real - time data as and when needed. Blockchain has made a substantial departure from contemporary auditing as it monitors the transactions in real - time rather than selectively testing and reconciling entries retrospectively as an annual or periodic exercise.

Blockchain technology is automated by artificial intelligence (AI) technology to help with real - time reviews and reduce transaction errors. Further, it develops professional knowledge and makes organisations ready for futuristic changes. Advanced, standardised, and augmented blockchain technology ensures transparency and accountability, eliminating the wastage of time in reconciliations and authentication and allowing the organisation to focus on exceptional activities.

However, the data will not be reliable and accurate without professionals' support because of various transaction complications. However, real - time data availability may be

possible if experts check, reconcile, and correct the transactions simultaneously.

### **How Blockchain technology facilitates accountants work remotely**

Today, stakeholders want more than accounting and financial information. Investors are more learned and knowledgeable than ever before. This has raised accountants' expectations and made the role of accountants in the organisation more crucial. We can say that in the coming times, accounting will play a significant part in the growth of businesses.

The pandemic has added more pressure on the accountants, and smooth communication and collaboration among the team members have become a challenge as they are working remotely after the imposition of lockdown. If we look at tax services, due to working from home, obtaining complete information from the client is a big challenge posed to accountants; meeting tax filing deadlines when you are not meeting your client in person has become an issue. It has increased the cases of rust out and employee layoff. After the pandemic breakout, companies are developing multiple - scenario financial forecasting models, which can prove helpful in responding to sudden changes in a business environment. Many modern accounting department processes can be optimised through blockchain and other technologies, such as data analytics or machine learning, increasing efficiency and adding value to the accounting function.

### **The inception of Triple Entry Accounting**

*"Ubi non est ordo, ibi est confusio!" (Where there is no order, there is confusion)*

- Luca Pacioli

*Though the Double entry system, originated by Luca Pacioli 500 years ago, has facilitated accounting and bookkeeping and immensely helped accountants over the centuries, there are still some shortcomings of this system like there is no connection between sets of books or separate records, which makes it difficult for auditors to verify and reconcile. This problem of the double entry system gives birth to distrust between different stakeholders. The flaws of the double - entry system led to the origin of a foolproof and trustworthy system of bookkeeping and accounting called the triple - entry system. Triple - entry accounting is somewhat misleading as there is no third entry, but a third component is added to the debit and credit system. This common thread or binding component is Blockchain, which links the books together and helps link two double entries. It can likely be viewed for external auditing purposes.*

Thus, Triple - Entry Accounting has the potential to revolutionise bookkeeping. Blockchain accounting will reduce double - entry transactions to half. This will significantly assist bookkeepers by saving their time and allowing them to focus more on value - adding roles within the profession.

### **Advantages of Blockchain**

Computer record keeping is vulnerable to fraud and cyberattacks. Blockchain provides shared and completely transparent information, which speeds up data verification and reconciliation.

- **Greater trust**
- It is a members - only network. Members can be assured that they are receiving timely and accurate data, and the information on the shared ledger can be accessed only by permitted members.
- **Greater security**  
Because of the immutability feature, a transaction is permanently recorded once validated; it can't be deleted even if the system administrator wants it to be.
- **More efficiency**  
A distributed ledger shared among a network's members eliminates time wastage in record reconciliations. To speed up transactions, a set of rules can be stored on the blockchain and executed automatically. For example, a set of conditions may be met, after which a creditor may be paid automatically.
- **Transactional Assurance**  
Blockchain and smart contract approaches will transform the parts of accounting concerned with transactional assurance and transferring property rights.

### Shortcomings of Blockchain technology

Nothing comes without flaws; despite being a revolutionary technological innovation in the accounting field, Blockchain must tackle some of the flaws associated with this seemingly flawless technology.

- **Interoperability**  
Interoperability in blockchain technology is in a state of infancy. Different Blockchain service providers are not collaborative. Interoperability is required if participating entities are using different blockchain platforms, or the cloud storage of one platform is exhausted, and the entity wants to switch to another.
- **Disposal of records**  
Presently, there is no way to alter or delete the data once it has been authenticated on a blockchain platform. Obsolete and non - useful data unnecessarily occupy space in cloud storage.
- **Scalability**  
Transaction processing rate varies from platform to platform depending upon the platform's compatibility with the domain, number of nodes, etc.
- **Lack of IT literacy in the accounting field**  
Not most accountants are compatible with using cloud - based accounting systems. They fear job turnover and resist the new technology.
- **Technical Glitches**  
While working with computers, there are always risks of technical glitches. For example, electricity outage on the closing day, trozen (virus) attacks etc.
- **The high cost of installation**  
The cost of installing blockchain technology is relatively high. Hence, installing it for all organisations won't be easy.
- **Fear of unemployment**  
The new technology makes work easier and automated, lessening the requirement for employees/professionals to perform the task.

### Effect of Blockchain technology on the performance of Business

- Resorting to blockchain technology can be crucial for MSMEs. Accounting and bookkeeping take a lot of energy

and time, and MSMEs' focus shifts away from the core work for which the unit was established. It is difficult for them to have a separate accounting department.

- Firms would prefer to outsource accounting as the digitally sound accounting firms have access to powerful accounting software, and they have time to learn how to use them to their fullest potential.
- Ease of access from any location will save time and paperwork.
- Businesses can purchase software that is easy to install and use and compatible with blockchain. That software provides panes in which related data is to be entered; once the system has been set up by entering details of bank accounts, vendors, etc., the business owners only need to update the information.
- Since the blockchain is a digitally shared and immutable system, there are potentially no chances of a clerical error; it improves the reliability of the accounts. Therefore, a manager can quickly know about the position of the cash or inventory at any time.
- Once incorporated, it will reduce the costs incurred by accounting departments to a great extent. There will be no expenses for keeping the books of accounts; the accounting department will require less staff and office space than earlier.

### Interpretation

Businesses are gradually shifting to Blockchain accounting. Anyone with an internet - supported device can access accounting data through a cloud service provider. Blockchain technology solutions make collaborating with others and sharing files and information easier. They save valuable time for accountants wasted on repetitive tasks and have also increased data security. A major advantage of Blockchain accounting is the continuous updating of data, which helps clients and managers make decisions based on cutting - edge information. It also ensures continuous monitoring.

The Ministry of Electronics and Information Technology (MeitY), Government of India, has devised a national strategy on blockchain to enable trusted digital platforms in the campaign of digital India. With Blockchain technology at the centre, from updating digital land records to creating digital repositories, India has already welcomed the technology. To stay competitive, the accountancy profession, compared to other professions, will require new skills over and above just technical and data management.

## 4. Conclusion

The accounting profession is changing, but the relevance of accountants to business is still intact. The role of an accountant is gradually becoming more of a consultant than an accountant; he is no longer identified as a person struggling with numbers. Technology has made things like data entry, bank reconciliation, and tax filing way more streamlined. Automated accounting tools give accountants more time to analyse the reports. Blockchain technology will not replace accountants but will enhance their role and improve their position in the organisation. Blockchain accounting makes financial analysis faster, makes it easier to access and use the data, discusses the real - time position of the projects and business, and increases control over financial management.

Blockchain technology needs standardisation and a solid framework base, which can be achieved with the help of the government, academicians, research and development houses, and other stakeholders. This may potentially create synergy among various economic activities.

Today, accounting is less about bookkeeping and more about data analytics. In addition to accounting knowledge and technical know-how, accountants today need to learn other skills like being an expert in analysing business requirements, understanding consumer behaviour, cash flow projection proficiency, financial forecasting, etc., to stay competitive in the more interconnected world. The more proficient one is in these critical skills, the more valuable he is. Accountants need not be engineers with detailed knowledge of how blockchain works, but in the coming times, they will be expected to be capable of working with this technology. The government should extend support and create a positive environment for Blockchain entrepreneurs to check the drain of talent in crypto-friendly nations.

## References

- [1] [https://www.ibm.com/in-en/topics/what-is-blockchain#:~:text=Blockchain%20defined%3A%20Blockchain%20is%20a,patents%2C%20copyrights%2C%20branding\).](https://www.ibm.com/in-en/topics/what-is-blockchain#:~:text=Blockchain%20defined%3A%20Blockchain%20is%20a,patents%2C%20copyrights%2C%20branding).)
- [2] [index\[at\]www.botkeeper.com.](https://www.botkeeper.com/) (n. d.). <https://www.botkeeper.com/>
- [3] *Blockchain: Powering India's Technological transformation.* (n. d.). Retrieved September 16, 2022, from <https://www.investindia.gov.in/team-india-blogs/blockchain-powering-indias-technological-transformation>  
*Blockchain: Powering India's Technological transformation.* (n. d.). Retrieved September 16, 2022, from <https://www.investindia.gov.in/team-india-blogs/blockchain-powering-indias-technological-transformation>
- [4] Demirkan, S., Demirkan, I., & McKee, A. (2020). Blockchain technology in the future of business cyber security and accounting. *Journal of Management Analytics*, 7 (2), 189–208. <https://doi.org/10.1080/23270012.2020.1731721>
- [5] Killi, M. (2019). Effects of Blockchain Technology on Accounting and Audit Profession. *Economic and Business Issues in Retrospect and Prospect, March 2019*, 405–413.
- [6] Rašević, M. (2007). National strategy on ageing. *Zdravstvena Zastita*, 36 (1), 59–65. <https://doi.org/10.5937/zz0702059r>
- [7] Sharma, A., Bhanawat, S. S., & Sharma, R. B. (2022). Adoption of Blockchain Technology - Based Accounting Platform. *Academic Journal of Interdisciplinary Studies*, 11 (2), 155–162. <https://doi.org/10.36941/ajis-2022-0042>
- [8] Vijai, C., Suriyalakshmi, S. M., & Joyce, D. (2020). The Blockchain Technology and Modern Ledgers Through Blockchain Accounting. *SSRN Electronic Journal, December*. <https://doi.org/10.2139/ssrn.3514501>
- [9] Zheng, R. (2021). Applications Research of Blockchain Technology in Accounting System. *Journal of Physics:*