Blockchain and its impact on Auditing and Assurance profession

> *"Blockchain will not only be a new disruptive database technology. Over time, Blockchain solutions will also be implemented in financial software upgrade cycles. In 'restricted areas' at first, then in more comprehensive applications."*
>
> **Thomas Ankenbrand, Lucerne University of Applied Sciences and Arts**

Introduction

Blockchain is a very interesting technological innovation emerged due to Bitcoin. Blockchain is not a Bitcoin. Bitcoin is a digital coin or virtual currency. Block chain is the technology that enables moving digital coin or assets from one person to another person. The blockchain is generally associated with Bitcoin. It was specifically developed to support Bitcoin. However, leaving the merits of cryptocurrencies aside, blockchain is identified as a technology that will disrupt all industries, with global companies continuing to invest in new applications. While IBM predicts that 66 percent of all banks will have commercial blockchain products by 2020, the potential applications are not limited to finance. In fact, according to a Market and Markets report, the blockchain technology market will be worth more than $2 billion by 2021.[1]

What is Blockchain and how it works?

As per its bookish definition blockchain is a continuously growing list of records, called *blocks*, which are linked and secured using cryptography. Each block typically contains a cryptographic hash of the previous block, a timestamp and transaction data. By design, a blockchain is inherently resistant to modification of the data. It is "an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way".

At present, to do a transaction between two parties, third trusted partner such as a bank is required. In the Blockchain technology environment both the parties can connect directly resulting in removal of third party intermediary. It uses cryptography algorithm (digital signatures) for secure exchange and provides a decentralized database/digital ledger of transactions which everyone available on the network can view. The network basically a chain of Computer Systems which approve the transaction before its verification and recording. Participant connected to Block chain who is using the shared database are called nodes. Each node is having an identical copy of the ledger.[2]

For instance, if Mr. A wants to send value to Mr. B, all the other nodes in the network communicate with each other using a pre-determined mechanism to check that the new transaction is valid or not. This mechanism or process is called as a consensus algorithm. After acceptance of transaction by the network, all copies of the ledger are updated with the new information. Numerous transactions are usually joined into a "block" that is added to the ledger. Each block contains information that refers back to previous blocks and thus all blocks in the chain are linked together in the distributed identical copies.

Nodes who are participating can add new transactions with time-stamp, however participants are not allowed to delete or modify the transactions once they have been accepted and validated by the network of computers. In case participant modified the previous block, it will not sync with netowork and resulting in excluded from the blockchain. Therefore, blockchain functioning immutable regardless of lacking a central administrator.

An article published by The Harvard Business Review, "The Truth About Blockchain", suggests that *"with blockchain, we can imagine a world in which contracts are embedded in digital code and stored in transparent, shared databases, where they are protected from deletion, tampering, and revision. In this world every agreement, every process, every task and every payment would have a digital record and signature that could be identified, validated, stored, and shared. Intermediaries like lawyers,*

---

[1] http://fortune.com/2016/09/28/blockchain-banks-2017/
[2] World Economic Forum Video — What is Blockchain? https://www.youtube.com/watch?v=6WG7D47tGb0

National Offices: Ahmedabad • Bengaluru • Chennai • Gurgaon • Hyderabad • Kochi • Mumbai • NewDelhi
Contact: info@asa.in

1

brokers, and bankers might no longer be necessary. Individuals, organisations, machines and algorithms would freely transact and interact with one another with little friction. This is the immense potential of blockchain" [3].

Is Blockchain really needed?

As rightly said **"What the internet did for communications, blockchain will do for trusted transactions."**
Ginni Rometty, CEO, IBM

As we know, transactions take place every second like orders, payments, account tracking, etc. Very often, each participant has his own ledger and, thus, his own version of the truth. Having multiple ledgers is a recipe for error, fraud and inefficiencies. The goal is to see a transaction end-to-end as audit trail and reduce those vulnerabilities. While emergence of the concept of blockchain in the various spheres namely enterprises, start-ups, life sciences and healthcare, Public Sector and other financial sectors can drastically improve the performance scale of these players apart from bringing in transparency, security and efficiency. Lack of awareness and consequential mis-application of the same may create hindrance in the functioning of these enterprises.

Blockchain impacts on Auditing and Assurance Profession

Whereas blockchain is expected to support the industry immensely, it will have its due impact on the financial results of the enterprise, attracting the corresponding audit challenges. Blockchain combined with appropriate data analytics, can help with the transactional level assertions involved in an audit, and the auditor's skills would be better spent considering higher-level queries.

Many business houses and other non-financial players have started focusing on blockchain technology and started assessing of impact areas and use of block chain technology for their business. In addition, commenced the identification of vendors or consultants to implement the blockchain technology. On the other hand, auditors who are involved in the audit of said business houses will need to start working towards enhancing their technical skills including expertise in data anytical tools to be well equipped to testify and validate the transactions on the network under blockchain environment. It seems that implementation of blockchain will be a boon for auditors in terms of keeping a real time track on all transactions and their reliability as it will also keep a check on the frauds being committed or expected to be committed on the client. Since the data once recorded in any given block cannot be altered retroactively without the alteration of all subsequent blocks, which requires collusion of the network majority, it may possess challenges in front of auditors in terms of incorporating the audit adjustment entries in case of variances noted during the course of audit.

> *Since the data is unchallengeable and absolute, accountants and auditors can save valuable time, which can also decrease cost. From an audit perspective, using blockchain, artificial intelligence, and cognitive tools can increase audit volume to help get through massive volumes of data. The technology also extends itself in helping accounting firms prevent fraud and collusion both internally and externally as quoted by* **Rich de Moll, Vice President, Blockchain Solutions for Finance at IBM**

At present, audit process is normally an annual exercise, mostly because of the time and effort invested in it. Since Blockchain provides distributed ledger, this technology may make it possible to conduct more frequent audits on a quarterly or even on monthly basis. Taken to the extreme, one might even imagine a scenario where real-time audits would be possible. This improves the auditor's understanding of the business, as the engagement is no longer a year-end snapshot. This in turn, can facilitate the ability to spot trends or future risks more proactively.

---

[3] *"The Truth About Blockchain" by Marco Iansiti & Karim R. Lakhani, February 2017: https://hbr.org/2017/01/the-truth-about-blockchain*

2

National Offices: Ahmedabad • Bengaluru • Chennai • Gurgaon • Hyderabad • Kochi • Mumbai • NewDelhi
Contact: info@asa.in

Opportunities for the auditors

Ease in verification Process
As we understand that by its structure and design, blockchains are resistant to change of any processed/saved data. It can technically serve as an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way. Therefore, blockchain can be used as a source of verification for reported/recorded transactions. For instance, instead of asking clients for bank statements or sending confirmation requests to third parties, auditors can easily verify the transactions on publically available blockchain ledgers. The automation of this verification process will leads to cost efficiencies in the audit environment.

Sample Based Substantive Testing
Due to Block chain functionality, the sample based substantive testing will soon be challenged, as auditors will use the blockchain technology to test the whole population of transactions within the period under observation. This extensive coverage will drastically improve the level of assurance gained in affected audit engagements.

Real-time Audit
In the era of Blockchain, fully automated audits may be a reality. The assessment of financial statement assertions such as existence, occurrence, accuracy and completeness of information, are amongst the prime area for audit automation as well as potential benefits from a timing perspective. This quasi real-time verification blockchain characteristic can also impact the audit process. Instead of assessments at year end (or interim), audit firms will be in a position to perform continuous on-line assessments throughout the period under audit.

Low risk of missing transactions
The distributed ledger removes multiple, disjointed internal and external databases of records that need reconciling and should reduce the risk of inadvertently missing transactions through timing mismatches or booking errors.

Immutability and Irreversibility
In the blockchain environment, transactions recorded in a clear way and without involving intermediaries such bank could help maintain accuracy, although human error remains a factor. But the transparency safeguards should ensure that everyone can see when there has been an inaccuracy, and if immutability is respected the audit trail will be preserved; a correcting entry is added rather than removing or making historical entries.

Change in Traditional Approach of auditing
All this and more will help the auditors to check completeness and accuracy of the transactions. Auditors will now be able to get a true and fair picture, and have the time to gauge a deeper understanding of the overall business model, rather than reducing the audit to a tick-box compliance exercise.

The stakeholders rely upon the auditors to enhance trust in the audited financial statements of the companies they hold their stake in. Auditors practice under strict regulations like RBI, SEBI, etc. professional codes of conduct and auditing standards, and are independent of the entities they audit. They apply objectivity and professional skepticism to provide reasonable assurance about whether an entity's financial statements are free of material misstatement and about whether a company's internal controls over financial reporting are operating effectively.

It is broadly believed that blockchain technology might eliminate the need for a financial statement audit by an auditor altogether. However never the less there is always a possibility of human error to be present irrespective of how much ever mechanized a task has been made. Hence to curb those errors and keep a track of transactions maintained over the blockchain, the role of the auditor will come into play. Even though, now owing to immutability of transactions, historical amendments cannot be made, however subsequent adjustments can be incorporated to rectify the errors if they may exist.

3

National Offices: Ahmedabad • Bengaluru • Chennai • Gurgaon • Hyderabad • Kochi • Mumbai • NewDelhi
Contact: info@asa.in

Challenges to the auditing profession

As we understand that block chain ensures transparency, immutability and irreversibility of transactions. In spite of that fact fraud instances cannot be fully eliminated. The successful adoption of block chain is highly dependent on the security of the underlying environment like software used for block chain technology. In order to be in a position to provide the necessary level of assurance, the Audit processes need to shift further towards the assessment of operating effectiveness of the internal Information Technology controls.

For instance, if someone accidentally or intentionally sends virtual currency to a wrong or unauthorized address (recipient), there is currently no way to reverse that transaction. Auditors in this case will need to assess whether effective automated controls are in place to validate transactions before they are executed. Moreover, in case of a phishing attack, there is no fraud department in Blockchain to report such an incident since in a blockchain there is no central administration. In this scenario, auditor will be expected to determine whether internal controls to prevent and detect phishing attacks are indeed operating effectively. In addition, in case a private key is lost through a software or hardware malfunction, the entity loses access to any virtual currency (such as bitcoin) that is associated with this private key. These bitcoins will no longer accessible to anyone on the bitcoin network; they are effectively out of circulation, forever. Effective disaster recovery procedures as well as backup and restoration procedures would help to prevent such situations from occurring. Such loss mitigation procedures are also expected to be assessed to verify whether controls that address the risks associated with block chain can be relied upon.

Despite block chain technology is by its nature and design is secured, human intervention will be required for coding the essential software to integrate and interface with blockchain. As per the requirements of International Standards on Auditing (ISAs), auditors are required to understand and assess the specific risks to an entity's financial statements arising from Information Technology, and how the entity is responding to these risks through implementation of IT controls. Due to development in blockchain technology, auditors will need to raise the bar by providing increasingly complex assurance services in more agile business environments and in support of upcoming digital transformations. A different professional audit mind-set and additional expertise will be required to satisfy the expectations of stakeholders and business owners in this new world. As per another report, "Here's Why Robots could be the Future of Finance" [4] from the World Economic Forum pointed, the traditional tasks of human audit work are also highly subject to substitution by artificial intelligence interventions. Meanwhile, some audit tasks may be better assisted by this advanced application of technology. Auditors will face the challenge of providing assurance to their stakeholders that these algorithms are effectively well designed, implemented, deployed and operating as expected[5].

Conclusion
Blockchain technology will help auditors to do the audit on real time basis and provide the audit trail for each transaction resulting in reduction of risk of fraud. But nevertheless, to do the audit in Blockchain environment auditor should be well equipped with technology and data analytics tools. As they say "**Change comes quickly. Anticipation, early understanding and integration of innovative technologies is critical to the success of any organisation**". It is imperative that the auditors pay due attention to this mechanism and identify the impacts that it may have on their audit programs. Because, blockchain is necessarily the future of industry and accounting and we as auditors have to be well versed and prepared to deal with it to avoid any adverse repercussions.

Rahisuddin Saifi
Manager, Assurance
Email rahisuddin.saifi@asa.in

---

[4] World Economic Forum report on "The future of financial infrastructure https://www.weforum.org/agenda/2017/07/heres-why-robots-could-be-the-future-of-finance

[5] Will Blockchain Disrupt the Lives of Governance and Assurance Professionals?" by Fernando D. Nikitin, August 2017: https://www.isaca.org/Knowledge-Center/Blog/Lists/Posts/Post.aspx?ID=844

4

National Offices: Ahmedabad • Bengaluru • Chennai • Gurgaon • Hyderabad • Kochi • Mumbai • NewDelhi
Contact: info@asa.in