BLOCKCHAIN TECHNOLOGY: IS IT TO MODIFY OR ELIMINATE THE AUDITING PROCESS?

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Abstract

Blockchain is a digital ledger that allows capturing of transactions conducted among several parties on real-time and serves as a decentralized database where each participant keeps an identical copy of the ledger. No intermediaries are needed to settle transactions and validation are performed by multiple users. Once a transaction has been accepted by the network, all copies of the ledger are updated. Consequently, this means that blockchain, polished with current technical developments, processes and service innovation such as smart contracts and widely held registers have the potential to significantly change traditional auditing process and control activities. In this study, we reviewed several existing literatures by some scholars on this new technology to ascertain whether its materialization is for modification and/ or absolute elimination of the entire auditing process, and, if so, what will be the impact on the audit profession, including new risks as regards change in processes as well as new prospects and/or opportunities.

Keywords: blockchain technology; auditing process; digital ledger; smart contracts

1.0 Introduction

A blockchain is an automated ledger created to lock up transactions carried out by several parties in a network. It is an internet based, peer-to-peer, detached ledger which includes all transactions since creation. According to the Chartered Professional Accountants of Canada (CPA Canada), blockchain technology has the potential to impact all record keeping processes, including the way transactions are initiated, processed, authorized, recorded, and reported. They further explained that independent auditors will need to understand this technology as it is implemented by their clients, for example, methods for obtaining sufficient and appropriate audit evidence will need to consider both traditional stand –alone general ledgers as well as blockchain ledgers. Blockchain also has probability for greater consistency and precision in reporting and accounting which could facilitate more efficient data mining and analysis.

Blockchain Technology, like any other technology, has developed with time to be what it is today. The first generation blockchain platforms that were developed was a display in the potential of the technology though it lacked the major features that might be used to sustain cases afar financial services applications. The key flaws were restricted throughput, slow transaction authentication, deferred settlement finality, no privacy and high energy consumption in mining. The second generation blockchain focused on building a flexible environment that could be used to maintain the operation of decentralized applications. The major setback for this second generation blockchain was interoperability between

different platforms, imperfect privacy, constrained throughput, (Bitcoin network-7 tps, Ethereum 15 tps, VISA 24,000 tps), interoperability, control, and sustainability. The third generation, which is based on the Directed Acyclic Graph (DAG) principle, presents enterprises with new prospects to implement Blockchain technology at a large scale due to its ability to overcome the flaws of the earlier generations. The major recompense is higher throughput which enables faster transactions (approx. 10,000 tps), interoperability eliminating sidled performance and enabling industry-wide implementations, enhanced security, very cost-effective, minor energy consumption due to miner-less operations, and improved sustainability. In summary, the third generation blockchain platforms were developed overcoming all the challenges of the earlier generation platforms.

While blockchain initially acquired interest because of its ability to be anonymous, such as in the case with cryptocurrencies like Bitcoin, the real demand of the technology may be due to the complete transparency the system offers. In the words of Popovski and Soussou, (2018), many have found that the core blockchain technology has relevance in an ever-increasing number of applications in nearly every industry. In 2013 for example, Ethereum introduced blockchain in the form of "a decentralized platform that runs smart contracts." It explained that blockchain "enables developers to create markets, keep records of debts or promises, move funds in accordance with instructions and many other things that have not been invented yet, all without a intermediaries or counterparty risk." While Bitcoin is simply a currency, Ethereum "is a ledger technology that companies are using to build new programs." It is one of the first expansions of blockchain technology outside of currency.

1.1 Problem Statement

The industrial insurgency and the resulting blast in growth of business activities was the reason for widespread adoption of auditing methods. The audit engagement starts by the initial establishment of a contractual agreement between the auditor and the audited, which usually proceeds with a risk assessment and formulation of an audit plan by describing the scope and objectives of the audit. Subsequently, auditors gather and analyze audit evidence and form opinions with respect to internal controls as well as consistency of the information provided by management. At the expiration of the engagement, auditors present a formal report expressing their opinion. This approach shows the twentieth century methodology which is characterized by high costs and noteworthy delays due to information collection, processing, as well as reporting. This said, these historical costs and delays are often not the standard currently. Presumably, in the current business realm, transactions are often posted and cumulated such that they can provide fair and immediate response to relevant stakeholders.

Additionally, academicians and practitioners have already acknowledged this information shift and developed several solutions that is most suitable, and which will portray the present business environment. Amongst these solutions developed were blockchain platforms, hence, the essence of this study.

1.2 Research Questions

At present, to the best of our knowledge, there is no available empirical data on blockchain as it relates to auditing process because, the platform is very new to most auditing firms including the "big four", hence the reason for only review of related and existing literature.

1.3 Research Objectives

The general and specific objective of this study is to review and ascertain whether blockchain technology has emerged to help modify the traditional auditing process or to eliminate the process entirely.

2.0 Literature Review

A blockchain is essentially a public ledger, where groups of transactions or events are recorded and stored in a chain-like data structure (Simoyama., Grigg., Bueno., & Oliveira 2017). Professional or financial auditors, nowadays in business environment, are the trusted professionals that ensure the reality of transactions, authenticate their evidence as regards the accuracy, completeness as well as the presentation of related information in financial statements. These objectives are achieved by auditors by having a good knowledge of the business of the client including their IT infrastructure and systems relevant to financial reporting and internal controls in place. The main purpose of a financial audit is to enhance the degree of confidence, trust, and or assurance of financial statements users. The Enron scandal in 2001 undermined the public trust on the audited financial statements, and it is just in its recovery stage lately, (Mueller, Carte, & Whittle, 2015; Fearnley., Beattie., & Brandt 2005; Zabihollah, 2004). To awaken this trust, novel regulations as well as accounting and auditing standards have been established, and this has added to complexity, which has increased the cost of control activities and reporting for companies.

At present, blockchain technology allows business enterprises to make digital interactions or record transactions in a way that is transparent, secure, auditable, efficient, and highly resistant to interruptions (Schatsky & Muraskin, 2015). Those features could not only decrease the accounting, auditing and

compliance costs but also transform and facilitate the work of auditors (Spoke, 2015). There is this belief that such technology will enable more proficient access to data and conclusion of financial audit. This is because assets and or documents are referenced by a ledger entry, which helps to simplify the work of auditors and accounting professionals (Schatsky & Muraskin, 2015), thus, reducing the manual work (Drane, 2016) while also making complete transaction traceability straightforward. Axelsen, Green, Coram, and Ridley, (2017), opine that technologies at the audits are more sophisticated, and blockchain with its technical features and distributed systems, is a typical example of complicated technology. If the role of auditors is less, and less to audit the financial data than to audit the blockchain, and confirm that it is properly implemented, then auditors are expected to understand those features thoroughly. They will have to widen their technical skill set to master coding, hashing, cryptography, and work on their soft skills. Audits can come in many forms. It can be in the form of financial audits, compliance, and regulatory audits. The interesting thing is that blockchain technology can be applied to all of them.

The Three Indispensable Features of Blockchain Technology

The unique values and indefatigable features of blockchain technology have made it gain lots of admiration. The following are the three major features of blockchain that make the platform indispensable. This includes Decentralization, Transparency, and Immutability. Blockchain does not belong to nor managed by a single entity, hence, it is decentralized. Elsden., Manohar., Briggs., Harding., Speed., and Vines (2018), opines that in a decentralized system, the information is not stored by one single entity but by everyone in the network. In a network that is decentralized, every interaction with a friend is done directly without going through a third person, and this was the main dogma behind Bitcoins. In other words, you are solely in charge of your money, you do not need a bank. In essence, you can make a transfer without going through the intermediary.

The blockchain is transparent, this makes it very possible for parties involved in a transaction to track their data if they wish. Transparency is one of the most fascinating and at the same time, misunderstood concepts in blockchain technology. Here, a person's identity is hidden through intricate cryptography and characterized only by their public address. So, while the person's real identity is sheltered, you will still see all the transactions that were done by their public address. This echelon of transparency has never existed before within a financial system. In the words of Batubara., Ubacht., and Janssen (2018), the blockchain platform adds that extra, and much desirable level of accountability which is required by some conglomerates.

Immutability as one of the indispensable features means that once a transaction has been recorded, it cannot be interfered with. Miraz and Ali (2018) suggest that it will be very valuable for financial institutions because with blockchain platform, people will not cook the books and/or swindle around with company's financial records. It has been observed that the reason why the blockchain gets this property is that of cryptographic hash function, which takes an input string of any length and gives an output of a fixed length. This becomes decisive when you are dealing with a huge amount of data and transactions. So basically, instead of remembering the input data which could be colossal, you can just remember the hash and keep track. The main feature of this cryptographic hash function is to have inundation effect. In other words, where there is even diminutive change in your input, the changes that might be revealed in the hash can be humongous.

Major Benefits of Block Auditing Over Traditional Auditing

Improvement of accountability and facilitation of audit assignment is one of the major benefits of blockchain technology. The merits of external audit capability of blockchain support, Web 2.0, which changes applications from being service centric to user centric. When using blockchain, accountability is certified as a part of timestamp traditional by the system. This allows every user to confirm whether the service operates in the proposed way or not. If the service fails the certification process, then the user has proof of cruel behavior which could be used to hold the service accountable. One other notable attribute of blockchain is to confirm authenticity of every recorded statement. No disclaimer is achieved with a blend of digital signature and public key infrastructure. The public key infrastructure is very essential to frustrate anyone, including the blockchain maintainers, from backdating the transactions and to ensure that certification of authenticity is not broadly dependent on security of utilized public key system. Eliminating uncertainty benefits the economy by streamlining it, facilitating greater confidence in decisions. The permanent record of a blockchain reduces the likelihood of financial crime, thus making records more trustworthy. It will also need to work quicker, more efficiently and have minor operating costs. Blockchain applications make it feasible to conduct continuous auditing due to real-time access to transaction records (Smith 2017). With resources freed from traditional evidence collecting and testing, audit firms should consider applying appropriate data analytics in blockchain, and expand advisory services such as control design, change management, and blockchain governance (ICAEW 2017). The big four themselves foresee that the cost and time necessary to conduct an audit would decline considerably (Allison, 2015; Tysiac, 2017). It seems therefore reasonable to expect a significant increase in the commercialization of financial audit services (Anderson, 2017) and a corresponding decrease in

audit costs, for instance, Ernst & Young (EY), announced the launch of Ops Chain, a set of applications and services to assist firms leverage blockchain technology to improve process and, hence, drive growth (Alarcon, 2018). The change in the accountancy profession standard will also speed up, for the fact that not only the audited but also the audit firm use more and more diverse kinds of technologies to accomplish their audit assignment. For example, KPMG has aligned with IBM Watson to begin automating and reformation of audit and tax processes (Smith, 2018), other types of artificial intelligence systems can also be used to reconcile data, including drones that can assist in inventory counts.

3.0 Application of Blockchain in Accounting and Auditing Profession

Blockchain offers drastically new ways to record, process, and store financial transactions and information, and has the possibilities of fundamentally changing the landscape of the accounting profession and reshaping the business network. In the accounting profession, using blockchain provides lucidity over assets ownership and existence of obligations, and could spectacularly advance effectiveness. Blockchain is the first change in how financial records are created, kept, and updated. This is because blockchain records are distributed among all their users rather than having a single owner. Even with no central owner and with time lags between all the users, yet a single, agreed-upon version of the truth disseminates to all users as part of a permanent record, and this is the genius of blockchain approach. This, as matter of fact creates a kind of 'universal entry bookkeeping', where a single entry is shared identically and permanently with every party to the transaction. Blockchain is not regarded as a solitary technology, but rather a practice or etiquette (i.e. a way of doing things), for recording transactions. It is an advantageous model for several reasons. For instance, in a market with many transacting parties, it could remove the need to reconcile unrelated ledgers. Blockchain being distributed between all users also removes outages and the cost of having to pay a central authority to preserve the precision of the ledger. Every participant in the ledger can trace all previous transactions, allowing for increased transparency and self-audit.

In summary, blockchain has the probability to boost the accounting profession by reducing the costs of retaining and reconciling ledgers and providing total certainty over the ownership and history of assets. It could also help accountants gain clarity over the existing resources and obligations of their organizations, and also free up resources to focus on planning and valuation, rather than recordkeeping. Blockchain will enable accounting to be more efficient as a result of increased trust in the information available and the reduced time spent in reconciling and disputing records with other parties. This will lead

to greater focus on the critical aims of the accountancy profession which includes interpreting the financial meaning of every transaction, and making available information to sustain better decisions. Organizations or companies implementing blockchain with smart contracts may enhance consent effectiveness and risk management. In the words of Pilkington (2016); Wild., Arnold., and Stafford (2015); OECD (2018), smart contracts could facilitate organizations' adherence to various laws and regulations. More importantly also, pre-defined alerting system could be implanted in blockchain to identify doubtful transactions on time. Blockchain could also be used to scrutinize an organization's financial strength and support decision-makers to design a new control system (Psaila 2017).

4.0 Blockchain, to Modify or to Eliminate

To accurately audit a company with significant blockchain-based transactions, the focus of the auditor will definitely shift. There is diminutive need to substantiate the accuracy or existence of blockchain transactions with external sources, but there is still ample attention to be paid to how those transactions are documented and recognized in the financial statements, and how critical elements such as valuations are decided. In the long run, more and more records could move onto blockchains, and auditors and supervisors with access would be able to check transactions in real time and with certainty over the attribution of those transactions. At the application level, blockchain brings new business to auditors, such as reviewing certain transactions and authenticating the existence of digital assets and confirming consistency between information on a blockchain and in the corporal world.

These new tasks could be challenging, predominantly as there are no centralized authorities on the blockchain. Auditors need to leverage their expertise in IT system audits to discover novel methods to realize certification of ownership. Moreover, blockchain could basically change the auditing process as absolute records of transactions is stored on a blockchain. Here, auditors will no longer need to request, and wait for parties involved in the transactions, to make available data and documents. Additionally, blockchain will outshine the traditional audit sampling process, and allow continuous audits for any 'on-chain' transactions in any specific period. The adoption of blockchain will free up resources that were formerly expended on collection and verification of evidence. It will change from transaction testing to control testing. This is because what is critical is the effectiveness of internal controls surrounding blockchain, as transaction records stored on the blockchain does not of a necessity guarantee the reliability of organizations' financial reports. For example, an ''on-chain'' transaction still could be executed between related parties, linked to some unobservable ''off-chain'' agreement or fraudulent

transaction (AICPA & CPA Canada, 2017). When auditors come across a definite blockchain, they are required to observe clients' incentives, as well as blockchain code quality, protocol changes, and power distribution among peers.

Notably, the profile of the auditors will change. The transparency, traceability, immutability and amalgamation of rules and procedures embedded into the blockchain technology itself may enrich processes and production of information in such a way that control and audit procedures may be changed extensively, or even in some cases, becomes obsolete. From the above, it offers auditors new opportunities to revamp best practices, update rules and procedures, define new standards of the profession that could be programmed within transactions or even innovate with new value-added services.

5.0 Conclusion

It is no revelation that this new, fraud-proof expertise may soon significantly change the auditing world. With the combination of peer-to-peer networking technology and cryptography, transactions are recorded and confirmed automatically, making it virtually impracticable to revert and change or alter any data. When considering the accuracy that this creates, it would be easy to assume there would no longer be anything left for an auditor. Notwithstanding the accepted idea, blockchain technology does not eliminate the need for an auditor. There are numerous reasons to continue conducting audits, even if your business is using blockchain technology. For example, blockchain technology does not decrease the risk of unauthorized, fraudulent, illegal, or related party transactions. Another example might include transactions conducted "off-chain" where the participating parties both agree to handle transactions without recording them through the blockchain ledger. This would unquestionably create a major audit concern. It's also imperative to note that even if all the original data is complete and accurate, it could still be misclassified in the financial statements.

There is also this likelihood of auditing the blockchain itself. The integrity of blockchain technology can be tested through a diversity of audit procedures. Several larger companies have already introduced methods for conducting audits on blockchains, which are about to be implemented in some financial services sectors. Moreso, we don't anticipate this new technology eliminating the roles of auditor. Instead, we believe that audit firms and/or auditors will continue to have a vital role in the audit process and will likely see many new opportunities related to blockchain. That said, it is pertinent to note, that one of the

greatest innovations to the auditing world is the introduction of blockchain technology, and its integration into auditing process. Consequently, companies will no longer change their records or reverse engineer their financial documents for audit purposes because blockchain allows users to take judgments based on all transactions that have occurred in the past and not just based on some random samples. This will increase the trust, and or assurance the auditors can give to the public regarding the audit report.

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