

Adoption of Blockchain Technology in Accounting and Auditing: Benefits and Challenges

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Abstract

Blockchain technology identified as a digital ledger which the records cannot be deleted or changed is considered to have significant advantages that will replace of the traditional accounting system. Blockchain facilitates accounting, provides real-time reporting and real-time audit. However it is a new technology so there are many challenges. There is a lot of discussion about blockchain, but people do not know the true value of blockchain. This study aims to identify the benefits and challenges of using blockchain technology adoption in accounting and auditing. For this, we did an opinion survey through a questionnaire at 5 points Likert scale. The questionnaire has been divided into two parts one is demographic profile and the other is benefits challenges-related questions. We used descriptive statistics and a non-parametric Kruskal Wallis test to analyze the non-probabilistic sample of 75 respondent's data set.

The result of our study discovered that the better transparency between internal and external user of accounting is the only benefit on which all respondents possess the same opinion but on the rest of the benefits significant difference in the opinion of the respondent was found. And in respect of challenges only Blockchain technology consumes high energy on which all respondent possess the same opinion but on rest of the challenges the significant difference in opinion of the respondents was found.

Key Words: Blockchain, technology, Real-time reporting, Benefits, Challenges, Accounting & Auditing.

Introduction

Blockchain technology is a distributed transactional database, a kind of general ledger or registry, in which transactions and details of these transactions “(date, place, amount, anonymized participants and their encrypted signatures)” are recorded and verified through consensus algorithms. Blockchain technology is an accounting technique that helps in assets ownership transfer, and maintaining of precise financial

information. It is a technology that mostly entails measuring, analyzing and communicating of financial information.

Since the internet, blockchain has been viewed as one of the most important disruptive technologies (Liu, Wu, and Xu 2019). Immutability, Security, Decentralization, Transparency, Traceability, Speedy and Efficient are the potential benefits of blockchain technology in accounting (Pugna & Dutescu 2020) it is also significantly altering the face of traditional accounting and bookkeeping. Here is a description of the benefits of adopting blockchain technology in accounting.

The immutability means the blockchain ledgers are permanent and it keeps the data unaltered and unchanged. Security denotes that the data is sensitive and important, and blockchain can significantly change how your critical information is viewed. Decentralization/Distributed ledger system refers to a procedure in which no single authority is in control of any transaction that occurs within the system, whereas blockchain prevents fraud and unauthorized activity.

Blockchain can potentially be applied in accounting, auditing professions in the following ways:

- A. Commence and execute smart contracts or transactions just as payment of account receivable after all the condition in the agreements is met.
- B Blockchain technology can authorise, verify, and record accounting business transactions in near real-time and without human intervention.
- C. Provide transaction traces and history, which is necessary for audit and assurance purposes for verification of business transactions, incomes, expenses, assets, and liabilities etc.
- D. Blockchain can be used in continuous accounting. Blockchain ledgers can be used to store and audit information which can be easily shared with relevant stakeholders such as government, creditors, and business partners to provide an ongoing assurance.

The several benefits of blockchain technology irrespective of accounting & auditing which mainly helps in Simple & Straight forward, Better transparency between internal and

external user, reduces fraudulent activity, secure record of proof, less laborious & less time consuming, possibility of frauds and errors is not maximum, simple to get the full financial statements, Enable non-reversible transactions and all participants in a blockchain had transparency and accessibility over transactions, provide transparent and complete transaction very fast and Better transparency between internal and external user of accounting. On these benefits, we took the opinion of respondents.

Challenges of blockchain technology particularly related to accounting & auditing are mainly difficult to edit transaction details afterward, can be slow when there is a fault in the network, a physical attack or failure that cuts off the peer to peer network, realize inexpensive system, consumes high energy, make falsification is extremely hard etc.

This study contributes to identify the perception of respondents about benefits and challenges about blockchain technology in accounting and auditing.

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 (2020) 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 (2019) 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. (2018) 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 (2018) 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.

Hambiralovic & Karlsson, (2018) in their study explained about the Bit coin was first suggested by unknown the person or people who used the pseudonym Satoshi Nakamoto. The blockchain technology suggested for Bit coin is an innovatory protocol that handles transaction past using a decentralized ledger and verifies transactions by cryptography.

Icaew, et al. (2018) in his study talked about the most basic features of blockchain technology which are make different from today's known ledgers are as follows

Propagate: There is no single 'master' copy of a blockchain ledger, contrary there are many copies. All participants can access an exact copy of the ledger and all copies are same

and equivalent. None of parties can control the ledger. New transactions can be saved rapidly and propagate to copies of all participants.

Permanence: When each user has own copy of the ledger, reality is designated by unanimity. Older transactions cannot be changed without consensus, meaning that blockchain registers are persistent. The whole ledger is stored by all participants and can be controlled and substantiated.

Programmability: Some blockchain permit for storage of program code as well as ledger records – generating automatic daily entries that automatically run when started. These are called smart contracts.

Taylor, et al. (2017) in his study talked about whereas a conventional database records all data on single servers, blockchain databases are copied and stored on all computers that join the network. A blockchain is a digital ledger distributed to multiple locations to provide security and ease of global access. Currently, the primary use of this technology is bit coin and other crypto currencies. However, it is expected to completely stop accounting operations of block chain technology in the very near future.

Nakamoto and Bystrom,(2016) 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.

Research Gap:

After study of above literature, it has found that most of work done on the features of blockchain technology. No work has been done on the benefits and challenges of using blockchain technology adoption in accounting and auditing because all the researchers worked on the secondary data. This would therefore be worth-wide to examine various respondents' opinion regarding the benefits and challenges of using blockchain technology adoption in accounting and auditing. The present research is humble attempt in this direction.

This study aims to identify the benefits and challenges of using blockchain technology adoption in accounting and auditing.

Objectives of the Study

1. To know the awareness of respondents regarding blockchain technology.
2. To know the opinion of respondents about benefits of blockchain technology in accounting and auditing
3. To explore the challenges of blockchain technology in accounting and auditing

Research Methodology

The study is based on primary data which was collected through opinion survey through a closed-ended structured questionnaire which has 15 close ended questions the closed ended questions were analyzed with descriptive statistics.

The questionnaire has been circulated through various social media platform via mail, linked-in, WhatsApp, Face book, instagram etc. and we divide our questionnaire into two parts one is the demographic part in which questions related to age, gender, and qualification has been asked. In the second part, we asked questions to respondents regarding their opinion on benefits and challenges from using this technology and from which sources they are enhancing their knowledge regarding this technology. We received 75 filled questionnaires through various sources.

The respondents for the present study were graduate, Post-graduate and research scholars. Personal interviews were

also taken to explore challenges and benefits of blockchain. 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 the benefits of using blockchain technology in comparison to traditional accounting. The period of study was 2021. The statistical techniques like mean, Standard Deviation, Coefficient of Variance (CV), Smirnov & Shapiro-Wilk test and Kruskal-Wallis H Test were used for analysis.

For the testing of normality of data set, we applied the Kolmogorov-Smirnov and Shapiro-Wilk test and we found in both tests the significance value is less than 0.05 which means data is not normally distributed hence we applied non-parametric Kruskal-Wallis test.

Hypothesis

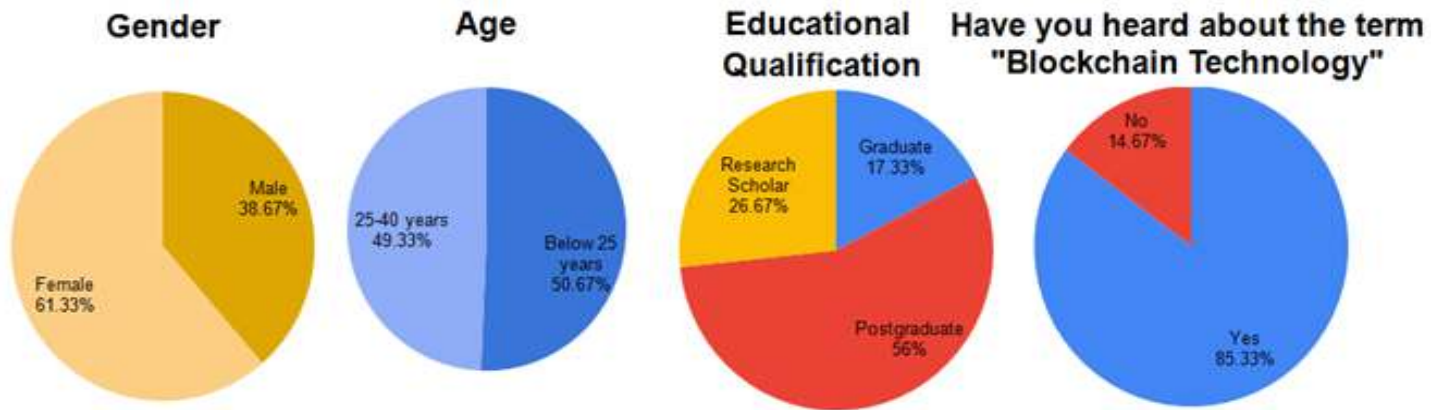
1. H1 -- There is no significance difference between the opinions of various respondents regarding benefits of Blockchain Technology in accounting and auditing.
2. H2 -- There is no significance difference between the opinions of various respondents regarding challenges of Blockchain Technology in accounting and auditing.

Demographic Profile of the Respondents:

The following table describes the demographic picture of the 75 respondents. In the present study the social and economics profile of the respondent which includes gender, age, and education qualification.

Table-1: Demographic profile of the respondents

Social Factors	Classification	Frequency	Percentage (%)
Gender	Female	46	61.33
	Male	29	38.67
Age	Below 25 years	38	50.67
	25-40 years	37	49.33
	40 and above	-	-
Educational Qualification	Graduate	13	17.33
	Post-Graduate	42	56
	Research Scholar	20	26.67
Have you heard about the term "Blockchain Technology"	Yes	64	85.33
	No	11	14.67



Majority of respondents are female. 53.30% of respondent are highly in age group of below 25 years. Therefore, the young generations are aware about blockchain technology. 56% of respondent are majority in postgraduate. Out of 75 respondents are 17.33% of graduate, 56% of Postgraduate, 26.67% of Research Scholar. Most of important things in this questionnaire out of 75 respondents are 85.33% of know about the term "Blockchain Technology" and remaining respondent are not know about the term "Blockchain Technology".

Descriptive Statistics

For this research responses are collected through Google form and it was found that majority of respondents opinion regarding benefits of blockchain technology in accounting and auditing are on agreement side because the value of the arithmetic mean found in various statements of questionnaire is greater than 3.

Table-2: Descriptive statistics of opinion of respondents regarding benefits of blockchain technology in accounting and auditing

S.No	Q.No	Particular	N	Mean	Standard deviation	C.V.
1	Q.1	Blockchain technology is Simple & Straight forward	75	4.57	0.841	18.39
2	Q.13	Better transparency between internal and external user of accounting	75	4.56	0.740	16.22
3	Q.15	Reduces Fraudulent Activity in the business accounting .	75	4.55	0.684	15.04
4	Q.9	A secure record of proof that the transaction occurred	75	4.53	0.684	15.10
5	Q.2	Less laborious & less time consuming as compared to manual accounting	75	4.51	0.891	19.77
6	Q.7	Blockchain accounting has reduced cost of maintain accounts books	75	4.45	0.741	16.63
7	Q.14	provides clarity over ownership of assets and existence of obligations	75	4.43	0.791	17.88
8	Q.5	Possibility of frauds and errors is not maximum	75	4.41	0.807	18.28
9	Q.6	Simple to get the full financial statements of companies	75	4.41	0.807	18.28

S.No	Q.No	Particular	N	Mean	Standard deviation	C.V.
10	Q.4	Reconciliation of accounts and auditing is possible	75	4.37	0.712	16.29
11	Q.8	The requirement of employee has reduced after Blockchain accounting	75	4.36	0.671	15.38
12	Q.3	Blockchain technology is suitable for small businesses and big companies also	75	4.29	0.802	18.67
13	Q.10	Enable direct transactions without the need for trusted third parties	75	4.27	0.859	20.14
14	Q.11	Enable non-reversible transactions	75	4.23	0.815	19.28
15	Q.12	Prevent double -spending	75	3.96	0.936	23.65

Standard deviation along with coefficient of variation (C. V.) shows that there is not much variation in the responses for all statements. The highest C. V. value is 23.65% which is for “Prevent double-spending”. The lowest value of C. V. is 15.04 % which is for “Reduces Fraudulent Activity in the business accounting.” Overall mean score for this statement shows agreement of respondents and variation in responses is very low. In general, C. V. ranges between these two extreme points.

The above table no. 2 respondents the priority about different perceived benefits of blockchain technology on traditional accounting and auditing. As per the study we can be said that the respondents given priority to Blockchain technology is simple & straight forward. Second most priority given to better transparency between internal and external users of accounting than blockchain technology as

it helps them to complete whole procedure of accounting and auditing. The third most priority given by respondents for reduces fraudulent activity in the business accounting which help them in which they can easily maintain financial statements .Then after they gave priority to a secure record of proof that the transaction occurred, less laborious & less time consuming as compared to manual accounting etc. are very simple. Here, we can say that respondents are giving most important about benefits like less laborious, reduced cost of maintain accounts books, provides clarity over ownership of assets and existence of obligations, Possibility of frauds and errors is not maximum, and blockchain technology compliance is not easy because of sometimes Technical glitches on the cloud storage delay the submission process.

Table-3: Descriptive statistics of opinion of respondents regarding challenges faced in adoption of Blockchain technology in accounting and auditing

S.No	Q.No	Particular	N	Mean	Standard deviation	C.V.
1	Q.5	Is it difficult to edit transaction details afterward	75	4.27	0.935	21.19
2	Q.14	Blockchain Can Be Slow when there is a fault in the network	75	4.25	0.871	20.49
3	Q.6	A blockchain may fork in the event of a physical attack or failure that cuts off the peer to peer network	75	4.24	0.898	21.18
4	Q.1	Realize inexpensive system	75	4.23	1.110	26.26
5	Q.12	Blockchain technology Consumes high energy	75	4.20	1.065	25.37

S.No	Q.No	Particular	N	Mean	Standard deviation	C.V.
6	Q.7	Record transactions based on fundamental principles (Scientific System)	75	4.17	0.760	18.21
7	Q.11	A high skill training set is required to maintain computerized accounting & auditing	75	4.15	0.865	20.86
8	Q.4	Make falsification is extremely hard	75	4.12	0.885	21.47
9	Q.13	Blockchain technology won't be able to work with sensitive information until anyone solves the problem	75	4.05	1.012	24.97
10	Q.3	Developing policy guidelines for encouraging Accounting and auditing to utilize the technology in the future	75	4.03	0.930	23.09
11	Q.8	Errors can be carried forward and compounded without anyone noticing	75	4.03	1.065	26.45
12	Q.2	Traders and transaction details are disclosed and privacy may not be protected	75	4.01	0.966	24.06
13	Q.10	Does Blockchain accounting involves the high risk of data loss	75	4.00	1.040	25.99
14	Q.9	Does not suit with companies that complete business transaction on a different dates	75	3.91	1.068	27.33

Standard deviation along with coefficient of variation (C. V.) shows that there is not much variation in the responses for all statements. The highest C. V. value is 27.33% which is for “Does not suit with companies that complete business transaction on a different date”. The lowest value of C. V. is 18.21 % which is for “Record transactions based on fundamental principles (Scientific System).” Overall mean score for this statement shows agreement of respondents and variation in responses is very low. In general, C. V. ranges between these two extreme points.

The above table no. 3 respondents the priority about different perceived disadvantage of blockchain technology on traditional accounting and auditing. As per the study we can be said that the respondents given priority to it is difficult to edit transaction details afterward. Second most priority given to Blockchain can be slow when there is a fault in the network than blockchain technology as it does not help them to complete whole procedure of accounting and auditing. The third most priority given by respondents for A blockchain may fork in the event of a physical attack or failure that cuts off the peer to peer network which not

help them in which they can't easily maintain financial statements. Then after they gave priority to realize inexpensive system, Blockchain technology consumes high energy and a high skill training set is required to maintain computerized accounting & auditing etc. Here, we can say that respondents are giving most important about challenges faced in adoption of blockchain technology like Blockchain accounting involves the high risk of data loss, Traders and transaction details are disclosed and privacy may not be protected, Developing policy guidelines for encouraging accounting and auditing to utilize the technology in the future, possibility of frauds and errors is maximum, and blockchain technology compliance is not easy because of sometimes technical glitches on the cloud storage delay the submission process.

Hypothesis Testing:

H01: There is no significance difference between the opinions of various respondents regarding benefits of Blockchain Technology in accounting and auditing.

Opinion on Benefits of Blockchain technology

In this section, opinions of respondents have been analyzed on the basis of their qualification. There are three qualification groups and it was earlier found that

respondents from PG group are higher as compared to other qualification. Results have been analyzed using Kruskal-Wallis H Test and have been presented in Table 4 and 5.

Table-4: Results of Kruskal-Wallis H Test for Qualification-wise opinion of respondents regarding opinion of respondents regarding benefits of blockchain technology in accounting and auditing.

Benefits	Kruskal- Wallis H Test	
	Chi-Square	P Value
Better transparency between internal and external user of accounting	7.659	0.022*

*Significant at 5% significance level

Result reveals that opinions of respondents of different qualification group are significantly different for “Better transparency between internal and external user of accounting”

Results of Kruskal Wallis H Test reveal that opinion of respondents of different qualification -groups is significantly different for 1 out of 15 statements. Thus it can be said that qualification is a not important factor in

influencing opinion of respondents for various Convenience.

Opinion on Challenges faced in adoption of blockchain technology

H02 There is no significance difference between the opinions of various respondents regarding challenges of Blockchain Technology in accounting and auditing.

Table-5: Results of Kruskal-Wallis H Test for Qualification-wise opinion of respondents regarding challenges of Blockchain Technology in accounting and auditing.

Challenges	Kruskal- Wallis H Test	
	Chi-Square	P Value
Blockchain technology Consumes high energy	6.165	0.046*

*Significant at 5% significance level

Results reveal that opinion of respondents of different qualification group is significantly different for “Blockchain technology Consumes high energy”

Results of Kruskal Wallis H Test reveal that opinion of respondents of different qualification -groups is significantly different for 1 out of 14 statements. Thus it can be said that qualification is not important factor in influencing opinion of respondents for various challenges faced in adoption.

Conclusion -

This study aimed to identify benefits and challenges of

using blockchain technology in accounting and auditing based on the perception of expert in accounting and auditing. The results demonstrated that Graduate, Post-graduate and research scholar were aware about the concepts and usability of the technology. Among the technology benefits, the respondents mentioned the elements of trust and control, information security and control against fraud and corruption.

According to the sample there are challenges to invest in blockchain within accounting and auditing, including the lack of information about the technology. Nowadays, digital technologies have become one of the main agenda

topics of business world. Blockchain technology which is one of these technologies draws attention as an important area where enterprises are rapidly investing due to their potential usage areas in all business functions. Technology and innovation will continue to evolve and impact the auditing and accounting process.

It is an emerging technology that can generate more transparency, reliability, security, fairness in monetary transaction and optimization of accounting records and processes. Among its main challenges stand out the need for more use cases in the accounting and auditing, legal regulation, cultural resistance, the lack of knowledge etc. Finally, future research on accounting and auditing should work to verify benefits and challenges with a special look at the areas of monetary transaction, auditing and transfer of assets etc. As a globally distributed digital ledger that records cannot be changed and never destroyed, blockchain can be useful as a reliable ledger for a company's accounting records.

The security, validity and clarity provided by the blockchain will facilitate the auditor's tasks and ensure that the audit is performed in real time. As a result, it may be necessary to apply new policies and standards compatible with block chain technology by taking steps to enable to prepare the necessary regulations and infrastructure of the professional organizations in accordance with the change.

The research also revealed that accountant and auditor are satisfied about blockchain technology adoption in accounting and auditing. It was found that most of accountant, auditor and research scholar are satisfied in majority of cases.

The results would benefit the blockchain technology to develop better and relevant information for 'accounting and auditing'.

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