DOI: https://doi.org/10.62823/ExRe/2025/02/02.60
Exploresearch (3048-815X) Vol. 02, No. 02, April-June, 2025, 85-94

Original Article | Peer Reviewed | Open Access

Exploresearch
e-ISSN: 3048-815X
Impact Factor: 6.262

www.mgmpublications.com

Possible Challenges in Implementing Blockchain Technology in the Accounting and Auditing Services Industry

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Article History:

Received: 20 April 2025
Accepted: 22 May 2025
Published: 01 June 2025

Keywords:

Blockchain Technology, Accounting, Auditing, Triple-Entry Accounting, Challenges.

DOI:
10.62823/ExRe/2025/02/02.60

Abstract: *Blockchain technology is an innovative way to replace the need for a third party to manage transactions. It uses a decentralised ledger to ensure the accuracy and integrity of accounting data in an immutable and transparent manner. However, certain challenges should be addressed to realise its full potential. This study aims to identify potential challenges when implementing blockchain technology in the accounting and auditing service industry. The critical challenges of implementing blockchain technology in the accounting and auditing service industry include governance, security, scalability, implementation, and trust. To overcome these challenges, investing in larger storage systems, bandwidth, computing power, and personnel training to manage associated risks is essential. It is crucial to address these challenges to implement blockchain technology successfully. Further research is required to validate these findings across other industries and explore the immense potential of blockchain technology as a game-changer.*

Introduction

In 2005, Ian Grigg proposed a solution to deal with accidental errors and fraud in accounting. He believes that companies should not be the sole recorders of business transactions. A third-party, cryptographically secured entry can record transactions between entities simultaneously. It was unclear who would act as the neutral, trusted third party to maintain the shared ledger. The emergence of Bitcoin and its underlying blockchain protocol showed that a neutral, trusted blockchain could replace a third party so the third shared ledger can be decentralised, immutable, secure, and automated using blockchain (Ibañez et al., 2020). Blockchain is merely another type of database for recording transactions, and this database does not require a central administrator. Blockchain databases work as distributed ledgers. So, every participant in this database receives a duplicate copy of the ledger, which is continuously updated. So, in such a shared ledger, when there is a record of the change of ownership of an asset. The ledger gets updated and will be shared with everyone (Cai, 2019). Therefore, this distributed ledger outfits with the triple-entry accounting mechanism Grigg (2005) proposed because of the nature of blockchain. Once an accounting entry is confirmed and added to the chain, it is complicated to alter or destroy (Dai & Vasarhelyi, 2017).

Moreover, the smart contract is another important concept that further enhances triple-entry accounting (compared to the double-entry system). The smart contract can rapidly verify whether transactions do not follow accounting standards/pre-specified rules. Therefore, with smart contracts embedded, the third ledger built on blockchain is far more than a simple ledger with historical information. This ledger can self-execute or self-enforce the agreements signed by two parties. It can also respond to and send information (Cai, 2019).

Blockchain technology is ideal for accounting since it can securely document and preserve digital assets and provide mechanisms for tracking financial flows and settling accounts. It distinguishes it from traditional accounting systems, which are vulnerable to fraud owing to human participation. Technology assists in ensuring that all accounting data is kept on a blockchain network in an immutable and transparent manner. Furthermore, it enables accountants and CA/CPAs to expedite their auditing operations while assuring the accuracy and integrity of the data. As a result, many prominent organisations, technologists, and end-users, including worldwide accounting firms, have gotten on board and invested in blockchain technology. Blockchain has the potential to transform accounting systems completely; however, several significant challenges must be overcome to fully realise the technology's benefits for businesses and stakeholders.

This paper aims to provide valuable insights to industry practitioners on the challenges that may arise while adopting blockchain technology accounting and auditing service industry. The primary objective of this paper is to identify potential challenges organisations may face during the implementation process.

The paper has been structured systematically. It begins with a comprehensive literature review, which highlights the possible challenges that may arise. This study is followed by a detailed discussion of the research methodology used before the results and discussion are presented. Finally, the paper concludes by drawing conclusions based on the findings.

Review of Literature

The potential challenges of blockchain technology are summarised in this section based on a literature survey. 'Lack of Clarity and Governance,' 'Security and Privacy,' 'Scalability,' 'Trust and Accountability,' and 'Difficulty in Implementation' are listed challenges.

- **Lack of Clarity and Governance**

The main issue with blockchain is a lack of knowledge and comprehension outside the financial industry. This thing hinders investment and innovation. Managers, accountants, and auditors need appropriate training and cooperation from IT specialists to use it efficiently and participate in the design and execution of smart contracts. (Dai & Vasarhelyi, 2017). According to Upadhyay (2020), The difficulty in identifying and developing use cases for blockchain technology is potent. Moreover, businesses and stakeholders are unclear about how blockchain technology operates and the potential for short-term and long-term market development (Upadhyay, 2020). Businesses are hesitant to utilise blockchain technology because of its perceived immaturity. The barrier in discovering three blockchain use cases is significant. Furthermore, enterprises and stakeholders are unsure of how blockchain technology works and the potential for market development in the short and long term (Upadhyay, 2020). Upadhyay (2020) also raises concerns about the need for 'legal' development to conduct business using these technologies. Linking computational transactions to plain language contracts and the ability for dispute resolution and legal enforcement are some of the issues they cite (Upadhyay, 2020).

- **Security and Privacy**

Like all computer systems, distributed ledger technology threatens the technology and its users. Double-spending tactics and assaults, for example, are known to allow the use of identical Bitcoin for two payments. Although blockchain security is improving, numerous known and undisclosed vulnerabilities remain. Because private keys are used to prove ownership and sign transactions, they can be lost or stolen if lost or compromised (Moll & Yigitbasioglu, 2019). Individual users must engage with the blockchain and transact using their private keys. As a result, key management and mechanisms for crucial loss or theft will be critical, and they must be structured to prevent adding new vulnerabilities via a "back door." A fundamental difficulty for shared ledgers, including numerous legal organisations, whether permissioned or not, will be establishing culpability among partners for the activity on the ledger. Examples include liability for company losses in the case of an operational failure, compromised keys, or

legal obligation in the event of data loss or theft (Deshpande et al., 2017). Cyberattacks on blockchain technology have demonstrated that this technology is not immune to cybercrime. (Upadhyay, 2020). According to Upadhyay (2020), A security issue exists when a 'miner' controls 51 per cent of the processing power to edit the transactions on the ledger. Though the blockchain provides for the immutability of transactions and data, it raises issues about data removal (in the long run) if a participating individual decides to do so.

- **Scalability**

According to Mendling et al. (2018), latency is another critical issue. In the absence of network congestion, transaction inclusion takes a given amount of time. Furthermore, many confirmation blocks are usually advised to guarantee that the transaction is not erased due to unintentional or deliberate forking. In Bitcoin, transactions are committed after 60 minutes on average, and in Ethereum, after 3 to 10 minutes. Even if approaches like the lightning network or side chains seeded off the main chain improve, blockchains are unlikely to attain latencies as low as centrally managed systems (Mendling et al., 2018). Another crucial factor is size and storage. Even if the data stream of transactions may not be excessively vast, many primary blockchain methods, such as Bitcoin, demand storage and processing capacity to assure data security. Storing the ledger, which is rapidly becoming more resilient, might be complex with all transactions (Zemánková, 2019). Large clients' implementation of blockchain technology will depend on developing larger storage systems, as noted above, wider bandwidth for data transmission, and a significant increase in computing power (Zemánková, 2019). Because transactions must be sent via the network before approval using the consensus mechanism, bandwidth is another scalability factor. As the number of nodes grows, the quantity of transactions necessitates improved network connectivity. The last scalability component is the maximum pace at which the network can function successfully, including transmitting, receiving, and verifying transactions. Big customers' adoption of blockchain technology will be contingent on the development of larger storage systems, greater bandwidth for data transfer, and a considerable rise in computational power, as earlier said (Kozlowski, 2018).

- **Trust and Accountability**

Accountability related to responsibilities and terms of use for participants; ownership related to automatic execution of permission by the user status (particularly in the case of anonymous users); unmanageable implications related to compliance with legislation and regulation. The management of keys and protocols for critical loss or theft are challenges that permissioned ledgers face. Furthermore, the permissionless ledger may result in high aggregated costs depending on the architecture as the network expands. It also causes occasional 'forks,' which impede transaction processing and decision-making. Regulatory organisations are essential in blockchain management, particularly when executing and supervising operations and services for moving assets or data between countries or ledgers, including anonymous contact. However, blockchain adoption is hampered by a lack of relevant and favourable policies (Upadhyay, 2020).

- **Difficulty in Implementation**

Upadhyay (2020) also shows concern regarding the Lack of trained human resources to build, manage, and oversee blockchain systems, which restricts blockchain development, deployment, and use scope. The widespread adoption of blockchain technology is hampered by a lack of understanding and awareness (Upadhyay, 2020). The distributed nature of blockchain poses major energy-intensive tasks, mainly when modifications are made to numerous copies. Furthermore, the blockchain's maintenance expenses are shifted from the network's core, resulting in significant management challenges with cost-effective system operation (Upadhyay, 2020).

Table 1: Challenges of BT-based Accounting Systems

Category	Author	Challenges
Lack of Clarity and Governance	(Deloitte 2016); (Dai & Vasarhelyi, 2017); (Upadhyay, 2020)	Lack of awareness
	(Dai & Vasarhelyi, 2017); (Upadhyay, 2020)	Difficult to identify and develop use cases
	(Deshpande et al., 2017); (Ølnes et al., 2017); (Upadhyay, 2020)	Perceived immaturity of BT.

	(Dai & Vasarhelyi, 2017); (Upadhyay, 2020); (Demirkan et al., 2020)	Lack of standards
	(Dai & Vasarhelyi, 2017); (Upadhyay, 2020); (Demirkan et al., 2020)	Lack of rules and regulations
	(Dai & Vasarhelyi, 2017); (Upadhyay, 2020)	A complex legal semantic layer
Security and Privacy	(Deshpande et al., 2017); (Moll & Yigitbasioglu, 2019); (Upadhyay, 2020); (Rathi, 2020)	Loss of keys
	(Moll & Yigitbasioglu, 2019); (Rathi, 2020); (Upadhyay, 2020);	Privacy leakage
	(Dai & Vasarhelyi, 2017); (Upadhyay, 2020); (Demirkan et al., 2020)	Cyber-attack or a failure
	(Dai & Vasarhelyi, 2017); (Upadhyay, 2020)	Forking of the Blockchain
	(Dai & Vasarhelyi, 2017); (Upadhyay, 2020)	Selfish miner
Scalability	(Mendling et al., 2018); (Hughes et al., 2019); (Upadhyay, 2020); (Frizzo-Barker et al., 2020)	Slow transaction process (Latency)
	(Dai & Vasarhelyi, 2017); (Hughes et al., 2019); (Zemánková, 2019); (Demirkan et al., 2020); (Upadhyay, 2020)	Size & Storage
	(Mendling et al., 2018); (Kozlowski, 2018); (Zemánková, 2019); (Caradaica, 2019)	Bandwidth (the transaction needs to be relayed through the network before being validated through a consensus algorithm.)
	(Dai & Vasarhelyi, 2017); (Upadhyay, 2020)	The maximal rate at which the network can work properly
Trust and Accountability	(Dai & Vasarhelyi, 2017); (Upadhyay, 2020)	Trust among parties
	(Dai & Vasarhelyi, 2017); (Upadhyay, 2020)	Uncertainty regarding accountability and responsibility of participants
Difficulty in Implementation	(Upadhyay, 2020); (Jumah et al., 2020)	Unavailability of skilled human resources
	(Dai & Vasarhelyi, 2017); (Upadhyay, 2020)	Difficulty in implementing and executing smart contracts
	(Dai & Vasarhelyi, 2017); (Upadhyay, 2020)	Compatibility with existing systems
	(Dai & Vasarhelyi, 2017); (Upadhyay, 2020)	Energy-intensive tasks

Source: Own Compilations

Research Methodology

The primary goal of this paper is to identify challenges in adopting blockchain technology-based accounting systems. To accomplish this, an online survey was conducted utilising a questionnaire distributed across several social media platforms, including 'LinkedIn,' 'Telegram,' and 'WhatsApp.' The questionnaire was created based on extensive research. Of the 1170 individuals who received the survey, only 351 responded. These respondents included accounting professionals, including Chartered Accountants, research scholars, and academicians. The data collected was analysed using descriptive statistics and multivariate analyses, with the analysis process broken down into two phases. In the first phase, the data was presented in descriptive reports, and the consistency and reliability of opinions were examined through the coefficient of Variance (CV) and 'Cronbach's alpha.' Hypothesis testing was conducted using the chi-square test. The second phase involved using Exploratory Factor Analysis (EFA) to identify common factors in the dataset with high correlations. Statistical tests were performed using SPSS 24.0 software.

- **Demographic Profile**

The analysis begins by examining demographic data for accounting professionals, including age, gender, education, experience, and profession. A total of 351 responses were studied. According to Table 2, 64% of those surveyed were male, and 36% were female. The majority of respondents (56%) were between the ages of 20 and 30, with 26% between 30 and 40 and only 18% over 40, providing a diverse range of ages for the sample. Table 2 also shows that 3% of respondents were undergraduates, 21% had graduated, 46% were postgraduates, 23% held a doctorate, and 7% had a postdoctoral qualification. Most respondents (56%) were Chartered Accountants, while 29% were from

academia, indicating a highly qualified sample. Table 2 concludes that 49% of respondents had 5-10 years of experience, with 20% having around 5 years of experience. Only 17% of respondents had between 10 and 15 years of experience, and 14% had 15 years or more of experience. This robust sample size of diverse age groups and highly qualified and experienced professionals provides a reliable basis for analysis.

Table 2: Demographic Profile Respondents

		Frequency	Percentage
Gender			
	Male	225	64.1
	Female	126	35.9
	Total	351	100.0
Age			
	20-30	197	56.1
	30-40	90	25.6
	40-50	43	12.3
	50 & Above	21	6.0
	Total	351	100.0
Educational Qualification			
	Under Graduate	9	2.6
	Graduate	75	21.4
	Post Graduate	161	45.9
	Doctorate	82	23.4
	Post Doctorate	24	6.8
	Total	351	100.0
Profession			
	CA	192	54.7
	Academia	103	29.3
	Accountant	24	6.8
	Researcher	32	9.1
	Total	351	100.0
Experience			
	0 - 5	170	48.4
	5 - 10	71	20.2
	10 - 15	60	17.1
	15 - 20	29	8.3
	20 & above	21	6.0
	Total	351	100.0

Source: Own Compilation

Results

- **Opinion Survey Analysis**

A survey has been conducted for present research work to identify challenges in the adoption of blockchain technology-based accounting systems. Opinion has been collected through a questionnaire to get respondents' views regarding the challenges in adopting blockchain technology-based accounting systems.

A list of the challenges in adopting a blockchain technology-based accounting system derived from the review has been examined based on a five-point scale. While analysing the questionnaire, 1 point was awarded for 'Strongly Disagree' and 5 points for 'Strongly Agree.' The score has been summarised in the following table. The data was analysed using the mean score, and the rank was assigned based on the mean. Out of 21 variables, respondents believe that 'Lack of awareness is the biggest challenge. It is evident by the highest mean score, i.e., 4.3. The respondent believes blockchain technology's second most crucial challenges are 'Unavailability of skilled human resources,' 'Cyber-attack or failure', & 'Forking of the Blockchain.' This is evident by the second-highest mean scores, i.e., 4.09, and the respondents ranked third in the 'Perceived immaturity of BT' category. This is evidenced by

the third-highest mean score, i.e., 4.03. 'Compatibility with the existing system' & 'Difficulty in implementing and executing smart contracts' reported fourth & fifth-highest mean scores, i.e., 3.98 & 3.95, respectively. Statistical results also identify five less critical challenges in adopting blockchain technology in the accounting system. Respondents believe that challenges viz. 'Slow transaction process,' 'Forking of blockchain,' 'The maximal rate at which the network can work properly,' & 'Selfish miner' are not severe challenges in adopting blockchain technology-based accounting systems. Table 3 shows less consistency regarding respondents' opinions about challenges in adopting blockchain technology-based accounting systems. It is evident by the coefficient of variation (CV).

Table 3: Analysis of Challenges of Blockchain Technology Accounting and Auditing Service Industry

S. No.	Statements	Mean	Rank	CV.
1.	Lack of awareness	4.3	1	18.74
2.	Difficult to identify and develop use cases	3.89	7	29.13
3.	Perceived immaturity of BT.	4.03	3	23.05
4.	Lack of standards	3.89	7	26.63
5.	Lack of rules and regulations	3.91	6	28.13
6.	A complex legal semantic layer	3.72	12	23.44
7.	Loss of keys	3.83	8	24.45
8.	Privacy leakage	3.68	13	28.54
9.	Cyber-attack or a failure	4.09	2	25.64
10.	Forking of the Blockchain	3.57	17	24.08
11.	Selfish miner	3.65	15	23.88
12.	Slow transaction process (Latency)	3.52	18	25.43
13.	Size & Storage	3.66	14	25.77
14.	Bandwidth (the transaction needs to be relayed through the network before being validated through a consensus algorithm.)	3.82	9	24.74
15.	The maximal rate at which the network can work properly	3.58	16	22.88
16.	Trust among parties	4.09	2	21.53
17.	Uncertainty regarding accountability and responsibility of participants	3.75	10	25.74
18.	Unavailability of skilled human resources	4.09	2	25.77
19.	Energy-intensive tasks	3.74	11	22.29
20.	Difficulty in implementing and executing smart contracts	3.95	5	23.30
21.	Compatibility with existing systems	3.98	4	23.88

Source: Own Compilation

- **Hypothesis Testing**

Table 4 shows the result of the normality test. Since the sample size is less than 2000, the Shapiro-Wilk value will be considered a normality check. The Shapiro-Wilk's test ($p < 0.05$) and visual inspection of histograms, standard Q-Q plots, and box plots showed that the mean scores of challenges in adopting blockchain technology-based Accounting were not approximately normally distributed.

Table 4: Test of Normality (Challenges of Blockchain Technology Accounting and Auditing Service Industry)

Scale Items	Tests of Normality						Fit for Parametric Test
	Kolmogorov-Smirnova			Shapiro-Wilk			
	Statistic	df	Sig.	Statistic	df	Sig.	
Challenges in the adoption of BT-based Accounting System	.268	351	.000	.735	351	.000	Not Fit

Source: Own Compilation

So, we need to use the non-parametric test for further analysis. To test the differences in the mean scores of the opinion of the professionals, the following hypothesis was made:

H_0: There is no significant difference among the mean score of the opinion of respondents regarding challenges in the adoption of blockchain technology-based accounting systems.

Table 5: Results of Hypothesis Testing

Variables	Chi-Square Value	df	Sig. (p-value)	Hypothesis
Challenges in the adoption of BT-based Accounting System	432.120	24	.000	Null hypothesis rejected.

Source: Own Compilation

The 'Chi-square test' shows a significant gap between the hypothesised test value and the calculated value regarding the challenges in adopting blockchain technology-based accounting (as $p<0.05$) at a 5% significance level. It means the null hypothesis is rejected. Hence, the result reveals a significant difference in the views of accounting professionals regarding the challenges in adopting blockchain technology-based accounting systems. It means some variables are significantly more critical than others. Although based on the mean score, the ranking has been provided to decide the priority of variables. However, every challenge variable is vital in the adoption of blockchain technology. An attempt has been made to identify the most prominent challenges in adopting a blockchain technology-based accounting system by factor analysis technique.

- **Exploratory Factor Analysis to Identify Major Challenges**

Exploratory Factor Analysis (EFA) is used to find the common factors in the dataset with high correlations (McDonald, 1985). It converts large groups of variables into factors to understand better the concept under study and its interpretation (Rummel, 1970). In this study, to reduce the above 21 challenges in the adoption of BT based accounting systems into a few important factors, factor analysis needs to be performed. Data need to be checked for reliability and consistency before performing factor analysis. A reliability test was conducted, resulting in a Cronbach's Alpha of 0.916, which is excellent; the higher value describes that the data seems reliable to perform factor analysis.

Table 6: Factor Analysis Statistics

Particulars	Challenges in the adoption of BT based Accounting System
Kaiser-Meyer-Olkin Measures of Sampling Adequacy	0.682
Cronbach's Alpha (N = 21)	0.916
Bartlett's Test of Sphericity	P < 0.05

Source: Own Compilation

Kaiser-Meyer-Oklin (KMO) measure and Bartlett's Test of Sphericity were used to determine the appropriateness of data for factor analysis. As per the above table, the result of KMO measures of sampling adequacy is 0.682, higher than 0.5, which shows that the data collected is appropriate for conducting factor analysis. Moreover, the Chi-square value of Bartlett's test of Sphericity is significant at a 5% significance level. Therefore, the null hypothesis of factor analysis that variables are not correlated in the population gets rejected.

Table 7: Factor Analysis of Challenges of Blockchain Technology Accounting and Auditing Service Industry

Factors	Factors Loading	Variance Explain (%)	Cumulative Variance (%)	Cronbach's Alpha
Lack of Clarity and Governance (N = 5)		40.12	40.12	0.879
Lack of awareness	.605			
Difficult to identify and develop use cases	.625			
Lack of standards	.864			
Lack of rules and regulations	.895			
A complex legal semantic layer	.773			
Security and Privacy (N = 4)		14.44	54.56	0.836
Loss of keys	.672			
Privacy leakage	.735			
Cyber-attack or a failure	.639			

Forking of the Blockchain	.671			
Scalability (N = 3)		9.83	64.39	0.821
Size & Storage	.884			
Bandwidth (the transaction needs to be relayed through the network before being validated through a consensus algorithm.)	.770			
The maximal rate at which the network can work properly	.800			
Difficulty in Implementation (N = 3)		8.03	72.42	0.848
Unavailability of skilled human resources	.790			
Difficulty in implementing and executing smart contracts	.739			
Compatibility with existing systems	.729			
Trust and Accountability (N = 2)		5.33	77.75	0.720
Trust among parties	.648			
Uncertainty regarding accountability and responsibility of participants	.844			

Source: Own Compilation

The principal component analysis method of extraction was used on the above-given factors of challenges in adopting BT-based accounting systems. Further, it has been rotated by using the varimax rotation technique. The latent root criterion, i.e., factors or variables with eigenvalues of 1.0 or greater, selects some factors to be considered. Factor loadings with a value more excellent than 0.6 were considered for further analysis. Five factors were extracted, accounting for 77.75% of the total variability.

Interpretation of Factors

- **Lack of Clarity and Governance**

The first factor was 'Lack of Clarity and Governance,' accounting for 40.12% of the total Variance. Items define this factor: Lack of awareness; difficulty identifying and developing use cases; Lack of standards; Lack of rules and regulations; a complex legal semantic layer. The principal challenge associated with blockchain technology is a lack of awareness. According to the statistics, accounting professionals are aware of blockchain technology somehow. They also feel that new technologies will influence their career, but they are unfamiliar with how they will be applied due to a lack of technical skills.

- **Security and Privacy**

The second factor was 'Security and Privacy,' accounting for 14.44% of the total Variance. Items define this factor: loss of keys, privacy leakage; cyber-attack or a failure; forking of the blockchain. Like all computer systems, distributed ledger technology has risks attributable to both the technology and its users. Because private keys are used to show ownership and sign transactions, their loss or compromise can result in data being lost or stolen. The cyberattacks on blockchain technology have demonstrated that this technology is no exception to cyber-attacks. Blockchain 1.0, involving Bitcoin, is not a perfectly fungible system because some coins may be linked to accounts used for fraudulent activities. But newer systems can address these concerns as systems develop by introducing "mixer" networks to hide the transaction history.

- **Scalability**

The third factor was named 'Scalability,' which accounts for 9.83% of the total Variance. Items define this factor: size & storage; bandwidth (the transaction needs to be relayed through the network before being validated through a consensus algorithm.); the maximal rate at which the network can work properly. Another crucial factor is scalability. Large clients' implementation of blockchain technology will depend on developing larger storage systems, as noted above, wider bandwidth for data transmission, and a significant increase in computing power (Zemánková, 2019).

- **Difficulty in Implementation**

The fourth factor was named 'Difficulty in Implementation,' accounting for 8.03% of the total Variance. Items define this factor: unavailability of skilled human resources, difficulty implementing and executing smart contracts, and compatibility with existing systems. The Lack of trained human resources

to build, manage, and oversee blockchain systems restricts blockchain development, deployment, and use scope. The legal definition and scope of smart contracts between participating parties are underway. Another problem is successfully transferring the legal code into a smart contract that accurately represents the involved parties, business entities, legal words, business logic, roles, and duties. The parties' acts must be understood in this way (in case of a code failure).

- **Trust and Accountability**

The fourth factor was **trust and accountability,** which accounts for 5.33% of the total Variance. Items define this factor: trust among parties; uncertainty regarding accountability and responsibility of participants. Accountability related to responsibilities and terms of use for participants. The ownership is related to the automatic execution of permission by the user status (particularly in the case of anonymous users) and unmanageable implications related to compliance with legislation and regulation. The management of keys and protocols for key loss or theft are challenges that both permissioned and permission fewer ledgers face.

Discission

It is essential to acknowledge that the principal challenge associated with blockchain technology is the Lack of awareness among professionals. According to statistics, accounting professionals are somewhat aware of blockchain technology. However, they are unfamiliar with how it will be applied due to a lack of technical skills. It is crucial to understand that distributed ledger technology, like all other technologies, has inherent risks attributable to the technology and its users. One of the most significant risks associated with distributed ledger technology is the loss or compromise of private keys. It can result in data being lost or stolen, and several cyberattacks on blockchain technology have demonstrated this. Furthermore, blockchain 1.0, involving Bitcoin, is not a perfectly fungible system because some coins may be linked to accounts used for fraudulent activities. However, newer systems can address these concerns by introducing "mixer" networks to hide the transaction history.

Implementing blockchain technology on a larger scale will require developing larger storage systems, wider bandwidth for data transmission, and a significant increase in computing power. Unfortunately, the Lack of trained human resources to build, manage, and oversee blockchain systems restricts blockchain development, deployment, and use scope. Another significant challenge is successfully transferring legal code into a smart contract that accurately represents the involved parties, business entities, legal words, business logic, roles, and duties. It is essential to note that accountability is related to responsibilities and terms of use for participants, especially in the case of anonymous users. The ownership is associated with the automatic execution of permission by the user status, which can have unmanageable implications related to compliance with legislation and regulation. Permissioned ledgers face challenges related to managing keys and protocols for critical loss or theft. Furthermore, the legal definition and scope of smart contracts between participating parties are still underway, making it more challenging to implement blockchain technology on a larger scale.

It is crucial to address these challenges before implementing blockchain technology on a larger scale. Developing a better understanding of blockchain technology, addressing the risks associated with the technology, and training human resources to build, manage, and oversee blockchain systems is crucial to the successful implementation of blockchain technology.

Conclusion

This paper offers a thorough overview of the obstacles involved in implementing blockchain technology in accounting and auditing service industry. It identifies five major challenges, namely a lack of clarity and governance, security and privacy concerns, scalability issues, difficulties in implementation, and trust and accountability problems. It is worth noting that blockchain technology faces significant challenges, including insufficient professional awareness, technical skills gaps, data loss or compromise risks, and legal regulations. To scale up the use of blockchain technology, we need to develop larger storage systems, bandwidth, and computing power. It is crucial to train personnel and address the associated risks to ensure the successful implementation of blockchain technology. Failure to address these issues could lead to severe consequences and limit the potential of blockchain technology. This research study is the first quantitative analysis of blockchain technology in accounting and auditing service industry, providing a framework for industry professionals, researchers, leaders, and managers to adopt blockchain initiatives and technologies to improve business and industry efficiency.

However, the study's scope is limited to the accounting and auditing service industry, and other industries may face different challenges when adopting blockchain technology. Therefore, further research is required to validate these findings on a broader scale, using quantitative methods to compare the results with current findings. Other investigations are necessary to explore the investment potential of this technology, including who will invest in it, why businesses should move to this technology, whether any changes will be needed to current business models, and how to maximise the benefits of blockchain while addressing scalability issues.

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