

EFFICIENT TAXATION AND SECURE TRANSACTION ON BLOCKCHAIN

Abstract

The rise of the sharing economy, digital commerce, and innovative company models has forced many individuals to reconsider their tax policies. Tax compliance is critical to an economy's success, yet most countries face a highly complicated tax environment as a result of a diverse set of stakeholders and years of policy evolution. This concept of tax is fairly easy to understand but the application of tax systems and the race public have to pay can get extremely complicated. So some accountants have dedicated their lives to helping others calculate their tax. As failure to pay the correct amount of tax is met with harsh penalties. One of the most important phases of the tax system is the verification process which ensures that the tax payers are paying their proper share. It is through the taxes we pay that the government can perform civil operations. In other words, without taxes, it would be impossible for the government to run the country. Income tax is one of the biggest sources of income for the Indian government. While paying tax, people are not sure whether their data that they are providing is safe or not. Some anonymous third person can hack the details of the tax payer. In order to avoid all these intermediaries, introduction of Blockchain technology in tax system is necessary. In this paper, we analysed the challenges that are impacting the current tax paying system. We provided a conceptual design and a prototype for paying tax in a safe & secure way.

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I. INTRODUCTION

In today's world the technology of blockchain and the distributed ledgers have been grabbing a big attention and have been triggering many projects in different industries. Mainly in the financial industry it is primarily being used for the mainly known technology that is cryptocurrency bitcoin, it is also fueled by significant process inefficiencies and the major cost base problem that's unique to the business. Also in a financial catastrophe it has shown that for financial services it is not always possible to determine the perfect present owner of an asset.

It is also a problem to track ownership for a long chain of changing buyers in the services for international financial transactions: when, eg., the United States investment bank Bear Stearns failed in the year 2008 so it was completely taken over by JP Morgan Chase, the number of shares that was offered to the buyers was greater than the number of shares outstanding on Bear Stearns books, it had become a difficult task for JP Morgan Chase to clarify the errors in accounting so JP Morgan had to bare the damage from excess shares. The process of tracking the ownership in a big transaction chain is a greater issue in financial markets, equal importance should be given for physical items like the broccoli or the diamonds etc., Walmart is a company that is serving more than 260 million customers every week and is looking for a good technology that can pin point which batches the veggies are infected with the bacteria called coliform in a specific case. Taking some of these aspects into consideration the technology of blockchain has promised to overcome these aspects by bringing a shift from trusting the people to testing the math as human interventions are not that much needed.

Blockchains uses are essentially unlimited as a peer-to-peer distributed digital record of time stamped transactions. The blockchain technology has the potential to transform financing security consumerism business structures and the digital property, as evidenced by data.

Blockchain can be termed as chain of data packets that each secondary block is linked with the primary block as the secondary block contains the hashed data (data is converted to 256 bit hash) of the primary block. The blocks in the blockchain are being validated by the network by the help of cryptographic means, the blocks will also consist of a time stamp and a nonce, those are the random numbers for validating the hash.

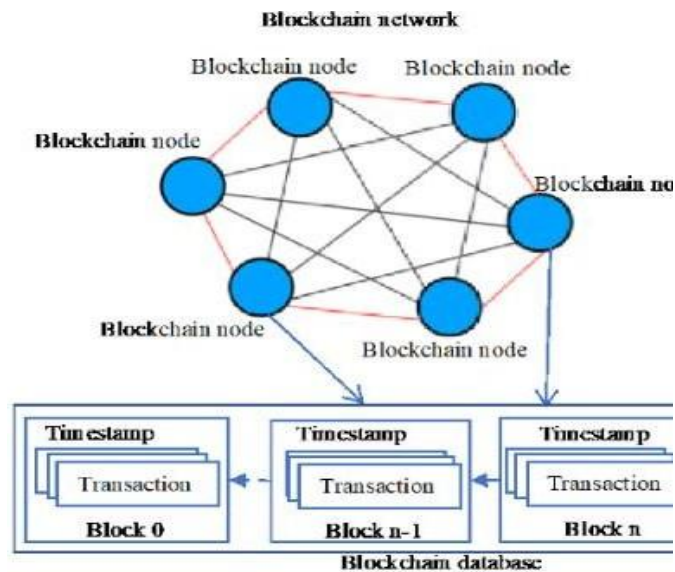


Figure 1: Blockchain Architecture

According to the architecture of blockchain in figure 1 a blockchain will be having two main components one is a database and other is network of notes. In a blockchain database it is a share fault tolerant and distributed Store that will be keeping a track of records, aunties records are called transactions. The blocks in the blockchain are formed by the gathering up of many transactions and each block will be linked with the previous block by a hash. A hash can be termed as a numerical value that is related with the data or information which is present in the previous block in addition to that every block will be consisting of a time stamp that will be telling when the block is formed or created and there will be a signature that will prove about the integrity and correctness and will have a random number that is called as nons for the operations of cryptography. Even if the blocks are publicly available, there in your table because off the norms and the signature that are present in the blocks The technology of blockchain will allow all the nodes to communicate with one another even if it is not having a trusted third party person. If by chance a node wants interaction it will send it in the form of transaction. Likewise all of these transactions are being collected to generate a block. That block will be very fried and will be added up to the blockchain only if that block is valid else the transaction will be recorded in a different from this there can't be any modifications done on them.

In the figure one the architecture in the technology of blockchain shows there will be n number of characters, telling us about the security immutability and many such aspects like non repudiation guarantees. Because the blockchain database is maintain by a large number of blockchain nodes administration is decentralized and there is no single entity that will have complete authority over the system.

In today's world technology is growing at a very faster rate which has also led to the economic development the world also in terms of economic development of the country. So the growth and advancement of technology has been proved to have both pros and cons in the society. As far as the technology is helping the society by online transactions and many more or it is also proven to be dangerous as the details can be to one such problem the blockchain technology can be used for protection and privacy of the data.

Taxes pay a vital role in economic development of the country. So to advance in the field of taxation and the aspects of blockchain technology we have come up with the project of “Efficient taxation and secure transaction on blockchain”. In this project the details of the person are validated with the ID proof then the payment is initiated and the transaction details is converted to hash using SHA256 algorithm and stored in the blocks of the blockchain.

The hash is stored in this as well as the next block also to make it as a chain . After the data is stored in the block it makes it impossible to make changes in the data as the hash of the data is stored in another block and it keeps on continuing and further many more blocks goes on adding into the blockchain, so it is impossible to hack and/or modify the details in the block.

II. PROBLEM DESCRIPTION

Every government in the world relies on tax income to deliver public services and ultimately benefit its residents. Without taxes, no country can run properly or secure the quality of life of its population. The more difficult the tax systems get , the more taxes individuals will have to pay. The efficient operation of blockchain technology in tax systems, which leaves more accessible money for taxpayers, is a critical issue. The adoption of blockchain systems is being challenged as to whether it will improve taxpayer conformance. Simultaneously, concerns that have the potential to play a significant role in both increasing revenue collection and avoiding financial crimes have begun to be raised on the global platform. Due to its potential tax benefits, blockchain technology is a very important subject because it is a visible, verifiable record based system.

The GST issue originates from unlicensed enterprises with an overall income of Rs.20 lakh or less, which are eligible for informal registration. Several of these enterprises choose to opt out of the application procedure since it will reduce their strain, but this will increase the load on the administration and other producers. This results in a reduction of income for the government, as well as a strain on producers, who will be required to pay the tax to the government on behalf of unlicensed firms via the backward charge system. Another issue that comes from this circumstance is a lack of transparency within the tax gathering section, since they are unsure on whose basis transaction is being done, forcing them to allow traders to claim input tax credits. The legislation on this subject is likewise a bit hazy. In practise, the government opposes dealings with unlicensed enterprises as well. Many businesses conduct sales budget and do not produce a formal invoice with accurate tax calculation; rather, they only send a confirmation of purchases to the clients, giving them the ability to make massive tax fraud operations in their Vat returns.

The next issue occurs as a result of the Entry Tax Allowance. The state only pays out input vat when the information provided by multiple organizations coincides, which takes time. This approach has a detrimental impact on the operating capital of enterprises that pay government taxes. The garment and footwear industry is the next issue. In the apparel and footwear industry, all products costing less than Rs.500 are free from paying GST. Despite the government's amnesty for the assess, small shops continue to charge Taxes to their clients in their bills. Aside from all of these issues, there is a difficulty with the few countries taxpayer's mentality of avoiding taxes, which leads to GST's incorrect deployment and bad

adoption. Numerous local businesses and producers have discovered and exploited flaws in the current GST tax scheme, which they will continue to exploit until the government modifies the legislation. We are all aware of the significance of paying taxes. Without taxation, the state would be incapable to meet society's expectations. Due of India's large tax base, Corruption has resulted from the involvement of middleman associates. Hence tax digitalization is much required. In order to prevent many cybercrimes and maintain security over tax digitalization, Introduction of Blockchain Technology is necessary.

III. LITERATURE SURVEY

1. J. Mathews, P. Mehta, S. Kuchibhotla, D. Bisht, S. B. Chintapalli, and S. V. K. Visweswara Rao Taxation is also very old like the term tax. So this paper shows the technique that can be used to predict the cost that a state lost of tax revenue because of the unscrupulous actions from the dealers. So in this case regression model is built by using the information of tax return and that details are used to predict the tax amount that has been avaded by dealers dealers can beclassified as suspicious by using the analysis of when for mini groups of dealers that are being formed after Virender ke mejoids clustering algorithm for the dealers data set. Adding up to it we will also be getting an estimation of what amount of tax revenue is lost, sothe results that we get will be used by tax enforcementofficers and they will be taking up safety measures from tax evasion.
2. F. Fatz, P. Hake, and P. Fettke, Tax compliance necessitates not just the implementation of compliant procedures, but also the documentation and reporting methods that prove conformity. Noncompliance has far-reaching effects, ranging from monetary fines to criminal investigations, putting a company's competitive position in jeopardy. As a result, the Organization for Economic Co-operation and Development (OECD) is looking into ways to make tax compliance easier for firms, including blockchain technology. However, guaranteeing tax compliance in business operations is a difficult and time-consuming effort, which is why tax compliance management is frequently done as a separate department inside a company. Nonetheless, tax compliance must be integrated into company operations in order to achieve compliance by design and efficient procedures.
3. Z. Zheng, S. Xie, H. N. Dai, X. Chen, and H. Wang, persistency, anonymity ,decentralisation,auditability are just a few of the advantages of blockchain. Blockchain applications include a wide range of topics, including cryptocurrencies, financial services, risk management, and more.Public and social services can benefit from the internet of things (IoT).Despite the fact that a number a number of studies havefocused on the use of blockchain technology in a variety of applications There is currently no thorough poll on blockchain technology in the United States both from a technical and an applicationstandpoint We perform a study to fill this need a thorough examination of the blockchain technology This article, in particular, introduces the blockchain taxonomy, as well as common blockchain consensus algorithms. examines blockchain uses and covers technical issues as well. significant advancements in addressing the issues Furthermore, this studyemphasises the blockchain technology's future directions
4. H. Y. Paik, X. Xu, H. M. N. D. Bandara, S.U. Lee, and S. K. Lo, Data and the consensus-based method of recording and updating it via distributed nodes are crucial to allowing trustless multi-party transactions in a blockchain-based system. As a result, the

degree of utility is ultimately determined by knowing what and how data is kept and handled. a blockchain-based application's performance and cost While blockchains.Improve the data's quality, the technology introduces additional issues by offering a transparent, immutable, and consistent data repository. From the standpoint of data management we examine blockchains from the perspective of a developer in this article. to emphasize key principles and issues when integrating a blockchain into a bigger IT system as a data storage system . The goal of the project is to improve people's awareness of blockchain technology as a data storage system and to encourage a systematic approach to implementing it to major software systems. First, we identify and conceptualize the common architectural levels of a typical software system with data storage. In terms of the blockchain. Second, we look at where data is stored and how it is used in blockchain-based apps.Third, we look into the data management elements of blockchains, particularly as a distributed data storage. Fourth,We examine blockchain data analytics and the trustworthiness of data analytics offered by blockchain. Lastly,In terms of privacy and quality assurance, we look at data governance challenges in blockchains.

5. S. Tikhomirov, Ethereum is a popular blockchain-based platform for smart contracts, which are Turing complete programmers that run on a decentralized network and typically deal with digital currency. A peer-to-peer system A network of mutually distrusting nodes preserves a shared understanding of the world. Upon request, it runs code in the global state. The information is saved in a database. A proof-of-work consensus process, similar to that of Bitcoin, secures the blockchain. In Bitcoin, that is. Ethereum's main value proposition is a fully functional digital currency. a programming language that may be used to construct sophisticated business logic Decentralized apps that do not require the involvement of a trustworthy third party are enticing, crowd funding, financial services, identity management, and other fields gambling. Smart contracts are a difficult study topic that covers a wide range of disciplines. Cryptography, consensus techniques, and programming are just a few of the topics covered. Governing, nuancing, and enforcing the law are all languages.
6. S. Zhai, Y. Yang, J. Li, C. Qiu, and J. Zhao Blockchain is a cutting-edge application paradigm that brings together distributed data storage, peer-to-peer transmission, consensus processes, digital encryption, and other computer technologies. It's decentralised, secure, and open to the public. During the Blockchain, a type of digital encryption, has a central role. Information security for users and transaction data is a must for the advancement of blockchain. The advancement of cryptography technology both encourages and hinders the advancement of cryptography. blockchain. The data layer, as well as the architecture of blockchain, is described in this article. The network layer, the consensus layer, the contract layer, and the application layer are the four layers. The fundamentals of the hash function, asymmetric cryptosystem, and other aspects of encryption technology are briefly discussed. a signature that is digital The use of cryptography at various levels of the blockchain is investigated.
7. Recently, Berryhill et al. revealed the promise of blockchain technology to provide more effective tax enforcement and compliance Because of the technique enables for the spread of data and programme logic data storage that isn't tampered with and data execution that isn't tampered with.

8. Weber et al. Proposing a blockchain-based architecture for cross-organizational business process integration. In this method, The blockchain guarantees that the interconnected execution of several tasks is completed. A choreographic model applies to local operations processes.
9. L'ópez-Pintado et al. Propose that all processes be integrated into a single process execution architecture (the blockchain). As a result, the collaboration process can be improved. An intra-organizational business process should be represented. A compiler is included in the solution architecture. The process models are converted into Ethereum smart contracts.
10. Owens and de Jong. According to the authors, blockchain makes tax compliance easier to integrate into corporate operations. The confirmation of processes is possible thanks to blockchain technology. Transactions are checked against a set of compliance requirements. The writers do, however, point out a few roadblocks that obstruct the use of blockchain technology in taxation. Take, for example, data protection.
11. Fridgen et al. In the context of documentary letters of credit, demonstrate a blockchain prototype for facilitating cross-organizational operations. The creators claim that blockchain technology can help to automate laborious operations, increase the auditability of their operations.

IV. METHODOLOGY

The Ethereum is actually a decentralized and an open source blockchain that has the functionality called the smart contract either is the cryptocurrency that is present in that platform. In the year 2014 the development work was started and was actually a crowd funded one and that network came into existence on the 30th of July 2015. Ethereum gives the permission for any person to deploy the decentralized applications on the Ethereum network by the help of which users can communicate. The applications of centralized finance gives an opportunity for a broad array of services in the field of finance without the need of aspects like exchanges or banks and even financial intermediaries, the Ethereum will also give an access to the users to exchange NOT and also create them, those are the rare tokens that will show the ownership of an asset. The development open source is also along way working on a major project that will be in upgradation for Ethereum which is called as Ethereum 2.0, the actual reason for upgradation is to increase transactions throughput in the network as the current rate is of about a round of 15 transactions per second the range of a round thousand transactions per second this can be obtained by dividing the blockchains and making them running parallel and making them to share a common proof.

Smart contract is a program in a computer or a transaction protocol that will execute automatically that will control the documents legally and the actions will take place from the terms that will be specified in the contract or an agreement. For example if there are two persons and a house needs to be sold to person B from person A there will be a smart contract return that says that if certain amount is transferred to person B then the document that in this case is a house document will be allocated in the name of A.

V. IMPLEMENTATION

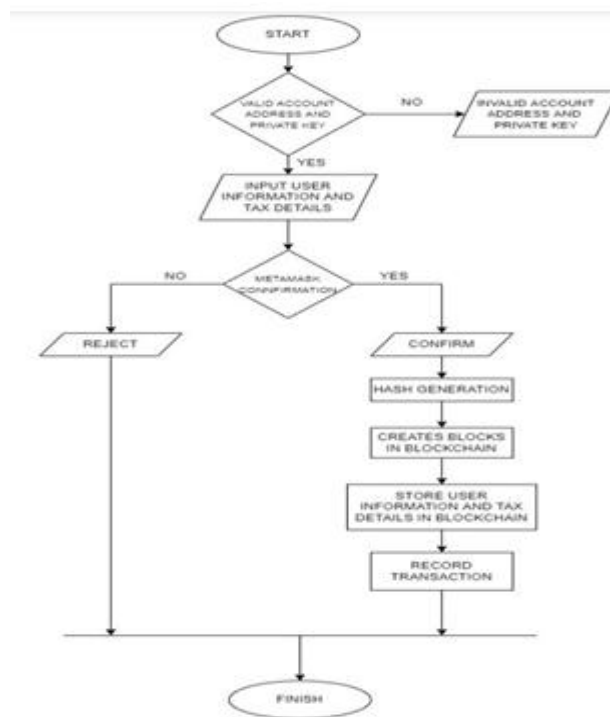


Figure 2: Flowchart

As shown in the below figure when the application is run then firstly there will be an authentication process whether the account address and the private key is valid or not only if it is valid then the application will request for the information from the user side so as such the user needs to upload all the data that are requested and further upon submission the metamask will ask for confirmation and some amount of ether will be deducted and also the amount that must be paid will also be deducted from the account and after the confirmation from the metamask.

The hash will be generated for the data and a block is created and that block is stored in the blockchain it will also record when the transaction has taken place by recording the time stamp so by using the technology of blockchain in taxation the problem that has been raised from using a relational database can be conquered like in terms of data security data manipulation and data theft .



Figure 3: Front End of Blockchain Based Tax System

VI. EVALUATION

At each stage of an asset's journey, blockchain provides an audit trail that documents its provenance. This helps give verification in areas where consumers are worried about environmental or human rights concerns around a product — or in industries plagued by counterfeiting and fraud. It is feasible to exchange data regarding provenance directly with customers using blockchain. Traceability data may also reveal flaws in any supply chain, such as when products are sitting on a loading dock waiting to be sent.

Traditional paper-based procedures are inefficient, prone to human error, and frequently need third-party intervention. Transactions may be conducted faster and more efficiently by using blockchain to streamline these procedures. Documentation, as well as transaction data, may be recorded on the blockchain, obviating the need for paper exchange. Because there is no need to reconcile different ledgers, clearing and settlement may be completed significantly more quickly.

Smart contracts may even automate transactions, increasing your efficiency and speeding up the process even more. The next stage in the transaction or process is automatically started after pre-specified conditions are satisfied. Smart contracts eliminate the need for human involvement and the reliance on third parties to verify that contract requirements have been satisfied. When a consumer provides the necessary evidence to submit a claim, for example, the claim can be immediately resolved and reimbursed.

VII. CONCLUSION

Blockchain is a viable technology, and authorities all around the globe are looking for honest tax money from their citizens. Tax evasion is fairly popular all around the globe, and while the government implements new laws every year, certain individuals constantly discover flaws in the scheme. For this reason, the administration made various revisions to the law in the middle of the year. Other issue is India's vast population, which means that every enterprise, from soap manufacturing to space missions, is available in the marketplace, and there are a number of minor exchanges taking place in real time. The existing GST system is clearly inadequate in addressing country's concerns, as companies today demand highly specialized professionals to enter operations and give timely returns to the government. Leveraging smart contracts and a secured ledger, the Blockchain Tax Regime offers a tamper-proof solution to all of these issues. This innovation not only improves visibility and security, but it also increases the flexibility of the complete system. Any change to the act can be implemented into the legislation at any moment. Modifications in tax rates, modifications in specific deductions, and any changes to the negative list are examples of these changes.

Because of its distributed infrastructure and peer-to-peer aspect, the blockchain is highly regarded and approved. Bitcoin, on the other hand, protects a lot of blockchain exploration. but, blockchain could be used in a multitude of sectors other than Bitcoin. With its main qualities of decentralization, persistency, privacy, and traceability, blockchain has proved its potential to revolutionize traditional industries. In this paper, We Proposed a Blockchain based Tax system i.e., provided a conceptual design and a prototype for paying tax in a safe & secure way.

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