

USE OF BLOCKCHAIN IN VOTING SYSTEM

Siddhesh Shinde

Guide: Asst. Prof. Gauri Ansurkar

Keraleeya Samajam's Model College, Dombivli East, Mumbai, Maharashtra, India

siddheshshinde20@gmail.com

ABSTRACT

What is blockchain technology? since its invention in 2008. The first decentralized by Satoshi Nakamoto. He improved the overall design using a Hashcash like method. The design was implemented as a core component of the cryptocurrency bitcoin where it serves as the public ledger for all transaction on the entire network. It is a digital ledger technology that allows for secure and transparent record-keeping of transactions. In a blockchain, every participant has a copy of the ledger, and all transactions are verified and recorded in a decentralized and transparent manner. The security of the blockchain comes from the fact that once a block is added to the chain, it cannot be altered or deleted without the consensus of the network. Besides its original use case in digital currencies, blockchain technology has been applied to various industries, such as supply chain management, healthcare, real estate, and voting systems. Its potential benefits include increased security, transparency, efficiency, and decentralization. One of the key benefits of using blockchain technology in voting is the ability to create a transparent and decentralized system. This means that anyone can verify the accuracy of the results, and there is no need for a centralized authority to oversee the process. The blockchain acts as a distributed ledger, with each node on the network holding a copy of the transaction history.

Key Words: Blockchain, Voting

INTRODUCTION

A blockchain is essentially a distributed database that consists of a continuously growing list of records, called blocks, which are linked and secured using cryptography. Each block contains a cryptographic hash of the previous block, timestamp, and transaction data. Blockchain technology can be used in voting to provide a secure, transparent, and tamper-proof system. By using a blockchain-based voting system, it is possible to create a permanent, auditable record of each vote that cannot be altered or manipulated without being detected. This helps to ensure the integrity of the voting process and increase confidence

in the election results. Another benefit of blockchain-based voting is that it can increase security by using cryptography to protect against unauthorized access or manipulation of the data. The use of digital signatures and encryption can help to prevent hacking or other attacks on the system. However, there are also challenges to implementing blockchain technology in voting. One of the major challenges is ensuring that all voters have access to the necessary technology to participate in the blockchain-based voting process. Another challenge is ensuring that the system is user-friendly and can be easily understood and trusted by voters. Additionally, there is the risk of cyber attacks on the blockchain network, which could compromise the integrity of the voting process.

CREATING A NETWORK

Choose a Blockchain platform

A blockchain network needs to be created, with each node holding a copy of the transaction history. This network should be decentralized to prevent a single point of failure. Identify voters: The voting system needs to identify eligible voters and ensure that each voter is only able to cast one vote. This can be done using digital identities or other forms of secure identification. Cast votes: Each vote needs to be recorded on the blockchain, with each transaction being verified by the network. The use of digital signatures and encryption can help to prevent hacking or other attacks on the system. Count votes: Once the voting period is over, the votes need to be tallied and the results declared. The use of blockchain technology ensures that the results are tamper-proof and cannot be altered without being detected. Verify results: The transparency of the blockchain allows anyone to verify the results, providing increased confidence in the integrity of the election. Protect privacy: While the blockchain provides transparency, it is important to protect the privacy of voters. This can be done by anonymizing the votes or using other forms of privacy protection. Implementing

blockchain for an election requires careful planning and attention to detail. It is important to ensure that the system is user-friendly and can be easily understood and trusted by voters, while also providing the necessary security and transparency to prevent fraud and ensure the integrity of the election results.

There are several blockchain platforms available, such as Ethereum, Hyperledger Fabric, and Corda. Each platform has its own strengths and weaknesses, so it is important to choose one that fits the needs of the voting system. Design the network architecture: The network architecture needs to be designed, including the number of nodes, the consensus mechanism, and the security measures. It is important to ensure that the network is decentralized and has multiple nodes to prevent a single point of failure. Set up the nodes: Each node needs to be set up with the necessary software and hardware to participate in the blockchain network. This includes installing the blockchain platform, configuring the node settings, and connecting to the network. Create smart contracts: Smart contracts are self-executing programs that run on the blockchain and can be used to automate the voting process. Smart contracts can be created using programming languages such as Solidity or Chaincode. Develop the user interface: The user interface needs to be developed to allow voters to cast their votes and view the results. This can be done using web or mobile applications that interact with the blockchain network. Test and deploy the network: The network needs to be thoroughly tested to ensure that it is secure and functioning properly. Once testing is complete, the network can be deployed and made available for use in the election.

TRANSFORMATION OF ELECTRIC VOTING SYSTEM BY BLOCKCHAIN

Electronic voting systems, like any technology, are not immune to problems. There are some potential problems that can occur with electronic voting systems. Electronic voting systems can be hacked, and votes can be manipulated or altered. This is a major concern, as it can compromise the integrity of the entire voting process. With electronic voting systems, it may be difficult for voters to verify that their vote was recorded accurately. There may also be a lack of transparency in the vote-counting process, making it difficult to ensure that the results are accurate. Electronic voting machines can malfunction or break down, leading to delays or inaccuracies in the voting process. Some electronic voting systems may not be accessible to all voters, particularly those with disabilities. Electronic voting

systems can be expensive to purchase and maintain, which may make them prohibitively expensive for some jurisdictions. Many electronic voting systems are proprietary, which means that jurisdictions are locked into using a particular vendor's system. This can limit competition and make it difficult for jurisdictions to switch to a different system if they are dissatisfied with the vendor's performance.

Blockchain technology has the potential to transform the electronic voting system by enhancing its security, transparency, and efficiency. Electronic voting systems have faced numerous security concerns over the years, including hacking and tampering, which have raised questions about the integrity of the voting process. Blockchain technology offers a solution to these issues by providing a secure and transparent platform for electronic voting. One of the key benefits of using blockchain technology in electronic voting is its ability to provide a tamper-proof and transparent record of every vote. In a blockchain-based electronic voting system, each vote is recorded as a block on the blockchain, which is distributed across a network of computers. This means that once a vote is recorded, it cannot be altered or deleted, and any attempt to do so will be detected by the network. Another benefit of blockchain technology in electronic voting is that it can provide greater transparency and accountability. With a blockchain-based electronic voting system, voters can track their vote and ensure that it is recorded correctly. Additionally, the system can provide real-time updates on the voting process, allowing voters to monitor the progress of the election. Blockchain technology can also help to reduce the cost and complexity of electronic voting systems. Because blockchain technology is decentralized, it eliminates the need for a central authority to manage the voting process. This can reduce the cost of running an electronic voting system and make it more accessible to a wider range of voters. However, there are also challenges and potential drawbacks to implementing a blockchain-based electronic voting system. One of the main challenges is ensuring the privacy and confidentiality of the vote. While blockchain technology can provide a secure and transparent platform for voting, it may also be possible for a voter's identity to be linked to their vote, which could compromise the privacy of the voting process.

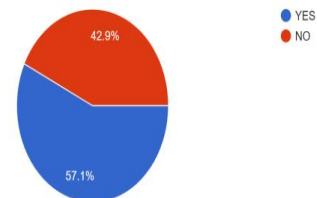
DETAILED DISCRPTION OF THE LAYERED APPROACH

User Interface Layer: The user interface layer is responsible for interacting with the user. It includes a user interface that allows voters to access the system, register, and cast their vote. The layer provides a simple and user-friendly interface that is easy to navigate. Application Layer: The application layer is responsible for the logic of the blockchain voting system. It handles voter registration, authentication, ballot creation, vote casting, verification, and vote counting. This layer is designed to be

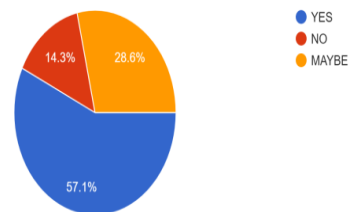
tamper-proof and to ensure the integrity of the voting process. Blockchain Layer: The blockchain layer is responsible for storing the votes and results. It is designed to ensure the immutability and transparency of the voting process. The blockchain layer includes the nodes, consensus mechanism, smart contracts, and the cryptographic algorithms that make the system secure. Network Layer: The network layer is responsible for connecting the different nodes in the blockchain network. It ensures that the nodes are communicating with each other correctly and that the data is transferred securely. The network layer includes protocols for communication, data validation, and encryption. Infrastructure Layer: The infrastructure layer is responsible for the physical infrastructure that supports the blockchain voting system. It includes the servers, storage devices, and other hardware components that are necessary to run the system. The infrastructure layer is designed to be scalable and to handle a large number of users. Each layer in the blockchain voting system has a specific function and interacts with other layers to perform its task. The layered approach ensures that the system is modular, easy to maintain, and scalable. It also provides security, as each layer is designed to be tamper-proof and to prevent attacks on the system. The layered approach is a best practice for building a robust and secure blockchain voting system.

SURVEY RESULTS

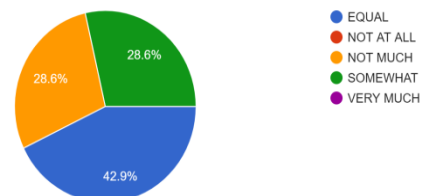
Have you heard about Blockchain Technology?
7 responses



Do you know we can use Blockchain Technology as alternative for Electronic voting system?
7 responses



How efficient is Blockchain Technology compare to EVM?
7 responses

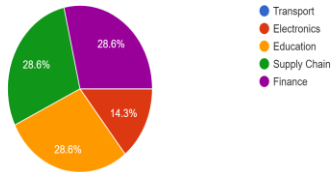


PROCESS FOR VOTING

In blockchain technology, voting can be conducted through a process called "decentralized autonomous organization" (DAO) voting. DAOs are digital organizations that operate through smart contracts on a blockchain, allowing for decentralized decision-making. Any member of the DAO can submit a proposal for a vote, which typically includes a description of the proposal and the outcome that the proposer hopes to achieve. Members of the DAO can discuss and refine the proposal, potentially making changes or suggesting alternative approaches. Once the proposal is finalized, the DAO sets a voting period during which members can cast their votes. The length of the voting period can vary depending on the specific DAO and proposal. Members can cast their votes using the DAO's native token. The voting process is typically conducted through a smart contract that automatically tallies the votes and determines the outcome. Once the voting period is over, the results are announced and the proposal is either accepted or rejected. If the proposal is accepted, it is implemented through the smart contract. It's worth noting that the specifics of the voting process can vary depending on the DAO and the blockchain platform being used. Some DAOs may have additional steps or requirements for voting, such as minimum quorum thresholds or weighted voting based on the number of tokens held by each member.

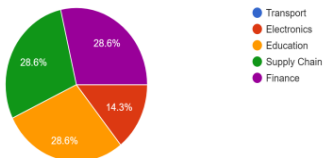
In which areas we can use Blockchain Technology?

7 responses



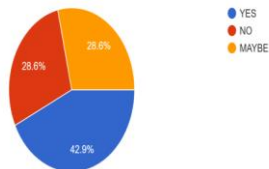
In which areas we can use Blockchain Technology?

7 responses



Can Blockchain Technology bring transparency to voting system in india?

7 responses



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CONCLUSION

In conclusion, this review gave perceptive details and outline of blockchain technology which we can use for election voting system. Secure and permanent block stores the records, once written, cannot be altered or delete. The vital role of blockchain technology in this sector can transform all the old methods. From the above survey we can see that technological awareness is important to understand the benefits of emerging technology.