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E-Voting System Using Block Chain Technology

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ABSTRACT: As blockchain technology becomes more widely adopted, a digital democratic voting system may be the next revolutionary step towards a transparent and trusted electoral process. This thesis aims to investigate the feasibility of a decentralized voting system and examine the potential challenges related to privacy, correctness, and integrity. A prototype was implemented using the Ethereum blockchain and smart contracts to demonstrate proof of concept. Additionally, social and environmental factors related to the prototype and electronic voting were studied. Despite identifying important trade-offs, the proposed implementation was found to be impractical. This study highlights the areas that require further improvement in order to use a blockchain-based voting system. In conclusion, it is recommended to use a private blockchain for the De-Vote voting system, as there is still work to be done to fully utilize blockchain technology in critical areas such as voting. Keywords: Decentralized, Blockchain Technology, Voting Chain Management.

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I. INTRODUCTION

Product authentication is a critical aspect in preventing counterfeiting, especially in the fashion industry where brands are significantly impacted by the rising trend of consumers returning counterfeit products. To maintain the authenticity and quality of a product, it is essential to have a reliable system in place that can act as a single point of product authentication.

1.1 BLOCKCHAIN

The blockchain is a decentralized network of database storage that offers superior reliability compared to other available options. It functions by connecting a series of blocks that each have their own hash, as well as the hash of the preceding block. Additionally, each block stores transaction data and a timestamp. The blockchain ensures that any new blocks added to the network are unanimously agreed upon by all nodes without the need for a centralized arbitrator. It employs its own consensus algorithms to add data records to its database, making it an openly available and highly reliable database.

Security and privacy: Blockchain technology relies on cryptography to ensure data security. Data is signed using a private key, and the authenticity of the data can be verified using a public key. This helps to prevent tampering and ensure the data is genuine.

Decentralized: In a blockchain network, each member has a copy of the same data in the form of a distributed ledger. If a member's ledger is altered or corrupted in any way, the majority of members in the network will reject the transaction to ensure the data remains accurate and consistent across the network. This helps to ensure the integrity of the blockchain and the data it stores.

Untrace ability: After a block is added to a blockchain, it becomes practically impossible to alter or manipulate the information stored within it. Each block in a blockchain contains a unique cryptographic hash based on the contents of that block and the hash of the previous block. Any changes made to the data in a block will result in a different hash value, which will in turn invalidate the hashes of all subsequent blocks in the chain. This makes it highly secure and

difficult for anyone to tamper with the information stored on the blockchain. If an attempt is made to alter a block, the network will immediately detect the discrepancy and reject or delete the block to maintain the integrity of the blockchain.

Transparency: The data in Blockchain is completely public and can be viewed by the participants.

Flexibility: The openness of blockchain technology, as well as the availability of various public and private blockchains, is one of its significant advantages. Users can choose a blockchain based on the type of application they want to create

II. SURVEY

Duplicate products not only cause significant losses to companies but also leave the user feeling cheated and frustrated.

2.1 LITERATURE SURVEY

2.1.1 Ali Kaan Koç Computer Engineering Dept.

Blockchain technology gained popularity with the emergence and widespread adoption of Bitcoin, the first cryptocurrency that gained mainstream acceptance. Initially, Blockchain was primarily used for financial transactions and trading, but its potential for use in various other domains has been explored due to its high level of transparency. For instance, in Bitcoin, the wallets are distributed, enabling real-time monitoring of the total amount of coins and current transaction volume worldwide. No central authority is required to approve or complete transactions in this peer-to-peer system.

2.1.2 Kimberly Villalobos:-

Electronic voting systems face unique challenges in ensuring security and certainty. Unlike other secure systems, voting systems must be distributed across a large number of machines and operated by individuals without technical expertise. The potential impact of a successful hack on a voting system is significant, as it can influence policy and social outcomes for millions of people and result in trillions of dollars in economic benefits for a corporation. Therefore, any electronic voting system must meet certain essential requirements to ensure its security and accuracy.

2.1.3 Abhishek Subhash Yadav Computer Engineering Department :

The blockchain technology gained popularity after the emergence and wide acceptance of Bitcoin as the first cryptocurrency used in daily life. Due to its high level of transparency, blockchain has become a trending topic in the software world. Initially used only for monetary transactions and trade, studies have suggested that it can be used in many other areas because of its distributed structure. For instance, in Bitcoin, the total amount of coins and instant transaction volume in the world can be followed moment by moment without a central authority to approve or complete the operations in this peer-to-peer based system.

III. EXISTING SYSTEMS

Electronic Voting (e-Voting) has replaced traditional paper-based voting systems in many countries. It enables voters to cast their votes securely and privately using digital or electronic media such as Electronic Voting Machines (EVMs), Short Messaging Service (SMS) via smartphones, Remote or Internet Voting (i-Voting) over the Internet, and more. The e-voting system utilizes microcontrollers to generate results based on the voters' choices.

Using an Electronic Voting System simplifies the election process. The first step involves logging into a website using registered voter details, followed by selecting a candidate based on personal choice. This is called digital ballot submission, and the system records the information and stores it in a database for counting and displaying the results.

The most popular types of e-voting are Electronic Voting Machines (EVMs) and recording votes via telephones, private computer networks, or the Internet (i-Voting) using a smartphone.

BLOCK VERIFY

Block verify is a company that utilizes blockchain technology to offer an anti-counterfeit solution. The company believes that blockchain has the potential to significantly improve anti-counterfeiting measures across various industries and benefit society as a whole. Block verify solution is designed to enhance supply chains by providing



transparency in transactions, tracking items through the supply chain, logging transfer of ownership, and verifying locations, thereby enabling the ability to differentiate between genuine and counterfeit products. The system operates on an enterprise blockchain protocol that ensures the secure storage of data. Block verify offers a global solution to identify fake products and enables companies to produce legitimate products and review their supply chains. The company's focus is primarily on the luxury goods and pharmaceutical markets. Each product tracked by Block verify is assigned a unique tag and tracked along the supply chain, allowing vendors to verify the authenticity of their products. The data is stored using Bitcoin and a private blockchain

3.1 LIMITATIONS OF EXISTING SYSTEM

- Increased Efficiency

Online voting systems offer a major advantage in terms of efficiency compared to traditional paper-based voting systems. The process of printing and counting paper ballots involves many steps and can be time-consuming. Online voting eliminates these steps, making the process much quicker and more streamlined. Electronic ballots can be sent out to voters with ease and the system can automatically tally the results once the voting period is over. This not only saves time but also saves money for the organization conducting the election.

- Improved Accuracy

The accuracy of online voting systems is a notable advantage over traditional paper-based systems. With paper ballots, there is always the possibility of human error, whether it is miscounting votes or mixing up ballots. In contrast, with online voting systems, the votes are tallied automatically, leaving no room for human error. This provides a sense of confidence and assurance that the results are accurate and dependable.

- Greater Turnout And Voter Engagement

Online voting can increase voter turnout by providing a more convenient way for voters to cast their ballots compared to physically going to a polling place. This convenience factor is especially important for individuals who have mobility issues or live far away from their designated polling place. In addition, online elections can also improve voter engagement. With traditional paper-based voting, it can be easy for voters to feel disconnected from the process. But with online voting, voters can see the results in real-time, making them feel more engaged and connected to the process. This increased engagement can lead to a stronger sense of civic responsibility and participation in future elections.

IV. PROPOSED SYSTEM

The primary goal of developing this system is to address negative marketing and improve business efficiency. The system aims to prevent brand devaluation and counterfeiting by implementing a fake product detection system using blockchain technology. It also aims to secure and authenticate product information, enabling traceability and identification of each product throughout the supply chain.

All product details are stored in a QR code or product ID and are recorded in immutable blocks of blockchain for enhanced security. The manufacturer can add product information to the system, which generates a unique QR code that can be used by retailers, distributors, and consumers to verify the authenticity of the product.

V. PROPOSED MODEL

Technology has been transforming democracy in various ways, which have created vulnerabilities in how political opinions are formed, expressed, and translated into election results. Russian meddling in the 2016 election, for instance, involved social media campaigns that influenced individual political opinions, while hacking into campaigns targeted the very roots of how open societies rely on information gathering and the media to make informed political decisions. Another form of hacking involves going after the machinery of elections, including polling places, voter registration systems, and infrastructure.

To address such vulnerabilities, blockchain technology offers a promising alternative to traditional voting systems, providing enhanced security, consistency, and speed. However, constructing a secure blockchain-based election system in a crowded country involves careful consideration of various factors, with the human factor being critical. In such a system, human interference must be absolutely prohibited.



VI. CONCLUSION

To Overcome all the Shortcomings in the Present Voting System, we came up with the Modern Technology of Blockchain i.e. E-Voting System using Blockchain. By using this modern technology, following things can be Achieved:- Cheap Voting System, Accurate Voting System, Fast Voting System. Every Citizen desires to have a Transparent and Direct Form of Democracy which is clear cut obtained from this E- Voting System using Blockchain. Faith of People on the Voting System is Increased therefore, many People Come Forward for Voting, thereby Increasing the Percentage of the People Voted. The Pen and the Paper Election is Eradicated thereby creating Accuracy in the Voting System. Everybody Prefers Time ,and Cost Efficient Systems so this E-Voting System using Blockchain is apt for Transparent Democracy. Ethereum Private Blockchain allows hundreds and hundreds of Transactions in a Second. Utilisation of the Smart Contracts lower the Load on the Blockchain. For Countries with Greater Population, some additional Technology should be added in this E-Voting System using Blockchain to avoid Errors. The main reason behind this system is to present an idea of implementation of blockchain in the voting system.

REFERENCES

1. R. Hanifatunnisa and B. Rahardjo, "Blockchain based e-voting recording system design," 2017 11th International Conference on Telecommunication Systems Services and Applications (TSSA), Lombok, 2017, pp. 1-6.
2. R. Krimmer, A. Ehringfeld, and M. Traxl, "The Use of E-Voting in the Austrian Federation of Students Elections 2009," Internet: <https://pdfs.semanticscholar.org/6b8f/34a5bd3e7eabc7e3a9a3f008187e4415e26a.pdf> [Nov. 26, 2018]
3. "The Geneva Internet Voting System,"
4. Internet: https://www.coe.int/t/dgap/goodgovernance/Activities/E-voting/EVoting_Documentation/passport_evoting2010.pdf [Nov. 25, 2018]
5. F. Þ. Hjálmarsson, G. K. Hreiðarsson, M. Hamdaqa and G. Hjálmtýsson, "Blockchain- Based E-Voting System," 2018 IEEE 11th International Conference on Cloud Computing (CLOUD), San Francisco, CA, 2018, pp. 983-986.
6. S. Ølnes, J. Ubacht and M. Janssen, "Blockchain in government: Benefits and implications of distributed ledger technology for information sharing", Government Information Quarterly, vol. 34, no. 3, pp. 355-364, 2017.
7. A. Barnes, C. Brake, and T. Perry, "Digital Voting with the use of Blockchain Technology," Available: <https://www.economist.com/sites/default/files/plymouth.pdf> [Nov. 20, 2018]
8. A. Barnes, C. Brake, and T. Perry, "Digital Voting with the use of Blockchain Technology," Available: <https://www.economist.com/sites/default/files/plymouth.pdf> [Nov. 20, 2018]
9. M. Pawlak, A. Poniszewska-Marańda and N. Kryvinska, "Towards the intelligent agents for blockchain e-voting system," Procedia Computer Science, vol. 141, pp. 239-246, 2018.
10. P. Tarasov and H. Tewari, "The Future of E-voting", IADIS International Journal on Computer Science and Information Systems, vol. 12, no. 2, pp. 148-165.
11. Bartolucci, S., Bernat, P., & Joseph, D. (2018). SHARVOT: Secret SHARe-Based VOTing on the Blockchain. 2018 IEEE/ACM 1st International Workshop on Emerging Trends in Software Engineering for Blockchain (WETSEB), 30-34.
12. Reyna, C. Martín, J. Chen, E. Soler and M. Díaz, "On blockchain and its integration with IoT. Challenges and opportunities", Future Generation Computer Systems, vol. 88, pp. 173-190, 2018.
13. Wang, J. Sun, Y. He, D. Pang and N. Lu, Large-scale Election



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