

A Secure and Transparent Approach for Real Estate Transactions Using Blockchain Technology

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Abstract—A Secure and Transparent Approach for Real Estate Transactions Using blockchain technology is a system that leverages blockchain technology to address issues in the traditional real estate industry such as fraud, lack of transparency, and inefficiency. This system provides a secure and transparent platform that enables buyers and sellers to directly interact and transact with each other without the need for intermediaries. The system is built on a decentralized network that stores data in a tamper-proof manner, which ensures that all parties involved can access and verify the information without the need for a central authority. The use of smart contracts in this system automates many of the processes involved in real estate transactions, reducing the time and costs associated with these processes. The system also allows for fractional ownership, which enables investors to buy and sell portions of a property. This feature promotes liquidity in the real estate market, making it more accessible to investors. Additionally, the system facilitates crowd funding for real estate projects, enabling smaller investors to pool their resources and invest in high-value real estate projects that were previously only available to larger investors. Overall, the Secure and Transparent Approach for Real Estate Transactions system offers a range of benefits over traditional real estate systems, including increased transparency, security, efficiency, liquidity, and accessibility. The potential for this system to transform the real estate industry is significant, and it is already gaining traction in many parts of the world.

Index Terms—Cryptocurrency, Decentralized, Smart Contracts, Unique digital identity

I. INTRODUCTION

Using blockchain technology, a Secure and Transparent Approach to Real Estate Transactions is a ground-breaking strategy that seeks to change the conventional real estate sector. Enhanced

transparency, immutability, and security are hallmarks of blockchain-based real estate systems, which are anticipated to address many of the issues that the real estate sector is currently dealing with, including fraud, inefficiencies, and a lack of transparency. The automation of numerous real estate operations, including property listings, purchase agreements, and title transfers, is made possible by the implementation of smart contracts, which are self-executing and self-enforcing. Additionally, the decentralized structure of blockchain eliminates the need for middlemen like banks, attorneys, and brokers, lowering transaction costs and expanding market accessibility. The implementation of blockchain technology in the real estate sector is expected to enable faster, more secure, and more transparent transactions, leading to increased efficiency and trust in the market. In this paper, we provide an overview of the current state of decentralized real estate using blockchain, as well as its potential benefits and challenges. We also explore various use cases and discuss future developments in this rapidly evolving field.

A. Real estate market and its challenges

The real estate market is highly lucrative and dynamic, but it is also fraught with challenges such as high transaction costs, lack of transparency, fraudulent activities, and inefficient processes. These challenges often lead to mistrust among stakeholders and hinder the growth of the market.

B. Blockchain Technology

Blockchain technology is a distributed ledger system that dispenses with the need for middlemen to conduct safe and open transactions. It is the perfect option for many industries, including real estate, due to its decentralized structure and immutable record-keeping capabilities.

C. Decentralized Real estate using blockchain

Using blockchain technology to create a more open, safe, and effective real estate market is the idea behind decentralized real estate. This idea attempts to do away with the need for middlemen, lower transaction costs, and boost stakeholder trust through a secure and transparent approach for real estate transactions using blockchain technology.

D. Smart contracts

With the terms of the agreement between the buyer and seller explicitly encoded into code, smart contracts are self-executing contracts. They make it possible to automate many different operations, such as real estate transfers, lease agreements, and mortgage contracts.

E. Tokenization

Tokenization involves converting real estate assets into digital tokens on a blockchain network. These tokens can then be easily traded, providing increased liquidity and accessibility to the real estate market.

F. Advantages of decentralized real estate

The advantages of decentralized real estate include reduced transaction costs, increase transparency, improved efficiency, and increased access to the market.

G. Challenges and limitations

The implementation of decentralized real estate using blockchain technology faces several challenges and limitations, including regulatory barriers, scalability issues, and the need for interoperability between different blockchain networks.

H. Future potential

Despite the challenges and limitations, the potential for decentralized real estate using blockchain technology is significant. It's potential to transform the real estate market by increasing transparency, reducing transaction costs, and increasing accessibility cannot be overstated.

II. LITERATURE SURVEY

Global real estate investments are larger than those in the stock market, according to [1]. Despite this, given to liquidity and global availability, there are substantially fewer RE investors. For owners, investors, and tenants, the current structure seldom meets their needs. This essay aims to demonstrate the possible benefits of real estate industry implementing blockchain technology. The investigation has thus far produced the following findings: Blockchain and

smart contracts can help RE with its conventional issues and offer far more practical resources for a game theoretic stable-priced market.

The study [2] examines two methods for carrying out Real estate transactions: a case study using blockchain technology in South Africa and throughout the world. There are two conceptual models that make use of business process modelling and notation. Documents were examined in order to provide adequate information on the real estate transactions. The results demonstrate that the South African real estate transaction process is inefficient due to its manual, paper-based, and heavily dependent third-party character, which causes numerous bottlenecks. According to the report, blockchain-based transactions are more efficient and call for fewer middlemen and manual processes.

According to the research [3] the government authority will give the purchaser of land a hard copy of the property papers under this system, and the system will store the papers in the Interplanetary File System (IPFS), a decentralized database. The IPFS network will produce the hash of the document. This hash will be safely saved in the Ethereum blockchain once the conditions of the smart contracts are satisfied. In the proposal [4], A smart contract is used to register lands on the Blockchain network. Efficiency, openness, dependability, and integrity for various entities and processes involved in purchasing and selling real estate are just a few advantages that the suggested study might offer to stakeholders. To ensure that the record has not been tampered with, the framework essentially offers services that provide a thorough history and unaltered information on a property.

The paper [5] describes a real estate management system powered by blockchain technology that will provide a transparent, secure, and efficient real estate management system. This system will include all real estate management departments. It will store all transactions on a distributed permission blockchain, which will be very secure and resistant to hacking, and it will be highly automated.

The paper [6] discusses on distributed ledger, smart contracts, and the Blockchain network architecture. The ability to digitize assets on the Blockchain, store a decentralized transaction history, enable encryption, and facilitate transactions between sellers and buyers are all made possible by this technique. Additionally,

this system approach can limit data explosion, carry out several transactions at once, and shield private information from prying eyes. The researchers built a model for this system using the Blockchain of Ethereum technology.

The research [7], in response to new circumstances, the global real estate market has started rebuilding. Network users were able to find the information they needed as soon as possible because of widespread digitalization and instant access to the Internet.

The proposed paper [8] includes a decentralized ledger that runs on top of blockchain technology to record land and property transactions. Smart contracts will validate all new transaction entries to ensure the transactions' validity. As a result, the data integrity could not be compromised.

The main contributions of the work [9], is built on the Uniswap protocol, which enables trading of cryptographic currency by users. The Uniswap protocol is referred to as the automated liquidity protocol used on the blockchain Ethereum platform. An Ethereum smart contract can be used with the Uniswap to purchase or sell ERC20 tokens on the decentralized distributed network.

The paper [10] describes the evidence that you are the owner of the property is the deed or agreement that the government physically executed on a piece of paper and the records that the government kept in its ledger. We must sincerely hope that you do not misplace the deed or suffer any damage to or loss of the official ledger. The researchers suggest a system to help us resolve this issue. Fill out the smart contract form if you want to buy or sell property, and you'll get a digital deed that is uploaded as a new block in the chain. Our ability to maintain integrity in the event of an attack or system failure is made possible by the presence of each node's copy on multiple servers.

III. PROPOSED SYSTEM

To overcome the inefficiencies and difficulties involved with conventional property transactions, a novel prototype has been developed. The system promises to revolutionize the real estate sector by removing middlemen, boosting transparency, and offering an immutable and effective platform for property transactions by using the open and secure characteristics of blockchain. Additionally, a distributed ledger that keeps track of all property-

related transactions would be used. The system would make use of cryptocurrency via Meta mask, smart contracts, and unique identity. The below-mentioned Fig.1 represents all three features provided in the project which include smart contracts, blockchain technology, and cryptocurrency.

Smart contracts handle tasks such as ownership transfers, verification of property details, and escrow services, thereby streamlining the entire real estate process and reducing human errors.

Each property would be represented by a distinctive digital ID that would be kept on the blockchain. This identity would contain all relevant information about the property, including ownership history, property details, and transaction history. The digital identity would be immutable, meaning that once the information has been recorded on the blockchain, it cannot be altered or deleted.

Buyers and sellers would be able to transact directly with each other, without the need for intermediaries, using cryptocurrency as payment. This would allow for faster, more secure, and more cost-effective transactions. This is done by interacting with the Ethereum blockchain using MetaMask, a software cryptocurrency wallet. Users can connect to their Ethereum wallet using a mobile app or browser extension, and from there, connect to decentralized applications. By employing MetaMask, we can make transactions directly between the buyer and seller without the need for banks, which eliminates the need for them. People from foreign countries can transfer money effortlessly using cryptocurrencies since there is no need to modify the currency denomination. Additionally, it does away with currency conversion fees that banks and other businesses impose. It is one of the safest methods for online money transfers. The initiated real estate transaction prototype by providing a secure, transparent, and efficient platform for real estate transactions, blockchain technology has the potential to completely transform the real estate industry. This system seeks to expand accessibility, open up new opportunities, and promote confidence in the real estate sector by doing away with intermediaries, boosting transparency, and using cryptocurrency and smart contracts.

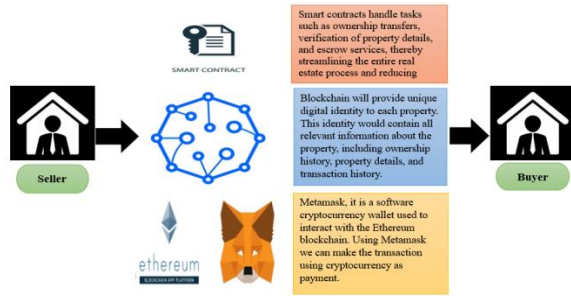


Fig.1. Proposed system diagram

IV. RESULTS

The results of the proposed prototype are represented in the below figures and it represents how a blockchain transaction can be executed from the buyer's and the seller's side using cryptocurrency. Fig.2 page is displayed as the home page when we execute our model.

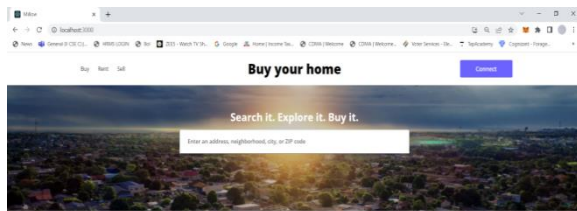


Fig.2 Screenshot represent the Website Screen

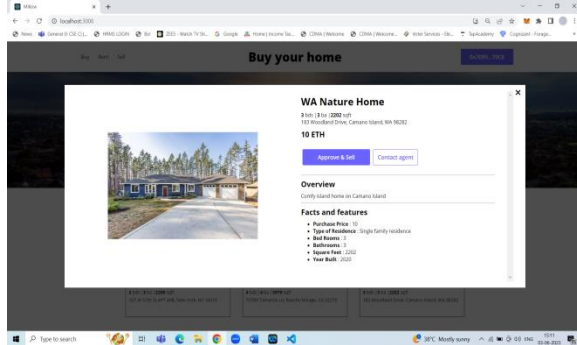


Fig. 3 Represent the Seller's Screen

Once the website gets open, we can log in to Metamask and choose any account. Here we chose a seller account to sell the property. When we log in as a seller we can sell the property by clicking on the "Approve and Sell" option. After that metamask will open and we can make the transaction using cryptocurrency.

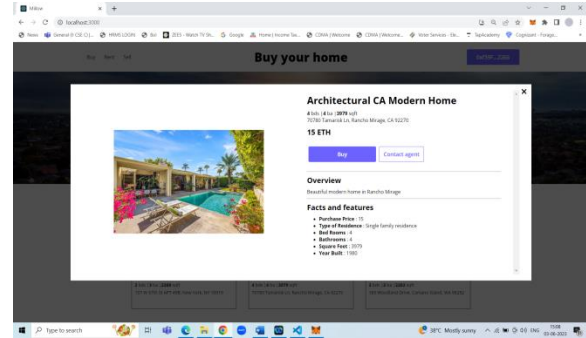


Fig. 4 Represent the Buyer's Screen

Once the website gets open, we can log in to Metamask and choose any account. Here we chose a buyer account to buy the property. When we log in as buyers we can buy the property by clicking on the "Buy" option. After that Metamask will open and we can make the transaction using cryptocurrency after the transaction money will be deducted from the account. Once everything is correct, then the transaction will be successful.

V. CONCLUSION

By offering a safe, transparent, and quick way to record and transfer property ownership, the use of blockchain technology to adopt a secure and transparent strategy for real estate transactions has the potential to revolutionize the sector. Smart contracts make it possible for automatic, unchangeable transactions that do not require middlemen, cutting expenses and expediting the buying and selling process. Additionally, the tamper-proof nature of blockchain guarantees that all data recorded on the ledger is accurate and reliable, reducing the danger of fraud and enhancing the system's overall integrity. Regulatory and legal obstacles, data standardization, and industry stakeholder adoption are only a few of the issues that need to be resolved despite blockchain technology's remarkable promise in the real estate sector. Additionally, the adoption of a decentralized system necessitates a sizable investment in infrastructure and resources, which may discourage certain businesses from utilizing the technology. However, we will likely see an increase in decentralized real estate systems as the advantages of blockchain become clearer and the technology is more extensively used. The industry will move towards this new method of doing real estate transactions due to the promise of better openness, decreased costs, and increased efficiency. In the end, the adoption of a

decentralized real estate system powered by blockchain technology has the potential to completely alter the sector, making it more accessible, effective, and secure for all parties involved.

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