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# Decentralized Banking using Ethereum Block Chain

**Male Bhanuprakash Reddy[1], Mekala Pradeep[2], Yalavarthi Nikhilraj[3], Dr. P.L. Kishan Kumar Reddy[4]**

B. Tech Students, Dept. of IT, Vasireddy Venkatadri Institute of Technology, Guntur, Andhra Pradesh, India[1,2,3]

Professor, Dept. of IT, Vasireddy Venkatadri Institute of Technology, Guntur, Andhra Pradesh, India[4]

**ABSTRACT**: Electronic cash that is entirely peer-to-peer would allow internet payments to be transmitted directly from one party to another without passing through a banking institution. Digital signatures are a part of the answer, but if a trusted third party is still required to avoid double-spending, the main benefits are lost. Proof-of-Work(PoW) and Proof-of-Stake(PoS) approaches can prevent double-spending. We use the Ethereum Blockchain, which secures the network and verifies the transactions in each block using proof of work (PoW) validation. Messages are broadcast with the best effort, and nodes can quit and rejoin the network at any time, with the longest proof-of-stake chain serving as verification of what transpired while they were gone.This project intends to create a banking system that uses smart contracts to replicate online payments, as well as a reward system that rewards users who deposit money in the bank. Users can send and receive money amongst themselves. Users can also cash out their funds. The bank's owner can offer incentives to all deposited users in a timely manner, and the users can then claim their rewards. The bank reserves allow the owner to view information about all users who have deposited money in the bank, as well as the quantity of money placed. Users can deposit and withdraw money depending on their preferences in a virtual bank that can process online transactions and reward them without requiring them to trust a financial institution.

**KEYWORDS**: Smart Contracts, Ethereum, Web3.js, Truffle-framework.

## I. INTRODUCTION

D-Bank is a decentralised banking application (DAPP) that is based on the Ethereum blockchain and allows users to deposit and withdraw money via smart contracts. Customers of D-Bank can also send money to one another.

Smart contracts, which are stored on a blockchain, are essentially programmes that run when specific criteria are met. They're typically used to automate the execution of a contract so that all parties can be certain of the outcome immediately away, without the need for any intermediaries or wasted time. They are a more efficient, cost-effective, and secure method of executing and managing contracts. It must have three fundamental properties in order to function: the ability to express value, transparency, and immutability.

To fulfill their missions, central banks employ a number of strategies known as monetary policy. They primarily regulate the money supply and interest rates, however. A central bank, for example, could alter the amount of money in circulation in an economy. More money in an economy means more consumer spending and, as a result, economic growth. In the opposite circumstance, when there is less money in the economy, people spend less, resulting in a recession.

Imports, exports, and foreign investment are all affected by central bank operations. High interest rates, for example, can discourage foreign entities from investing in real estate, while low interest rates can encourage investment.

## II. RELATED WORK

Users money is kept by banks, corporations whose overarching objective is to make money through centralized finance. Third parties who facilitate money flow between parties abound in the financial system, each charging a charge for their services. Let's say a user used his credit card to buy a gallon of milk. The charge is sent from the merchant to an acquiring bank, which then sends the card information to the credit card network.

The network clears the charge and asks your bank for payment. Your bank approves the charge and transmits it to the network, which then delivers it back to the merchant via the acquiring bank. Merchants must pay for your ability to use credit and debit cards, so each organization in the chain receives paid for its services.

All other financial activities are costly, loan applications might take days to process and you may not be able to use a bank's services while abroad.

The following are issues and flaws in the world's present financial institutions :
- Unreliability
- Fees that's are huge

- Transaction that takes lot of time
- Human Bias
- Data collection
- Security Issues

### III.PROPOSED SYSTEM

By allowing people, merchants, and corporations to perform financial transactions using developing technologies, decentralized finance eliminates intermediaries. Peer-to-peer financial networks that use security protocols, connectivity, software, and hardware developments are used to achieve this.

Users can lend, trade, and borrow using software that records and validates financial transactions in distributed financial databases from anywhere you have an internet connection. A distributed database is accessible from multiple locations, it collects and aggregates data from all users and verifies it with the help of a consensus process.

Decentralized finance use this technology to abolish centralized finance models by allowing anybody, regardless of who or where they are, to access financial services.

Through personal wallets and trade services tailored to people, DeFi applications provide users more control over their money. Because cryptocurrencies use automated methods, they never fall out of operation because their software does not require a lot of human interaction or intervention. As a result, they are available at all times of the day, including weekends and holidays.
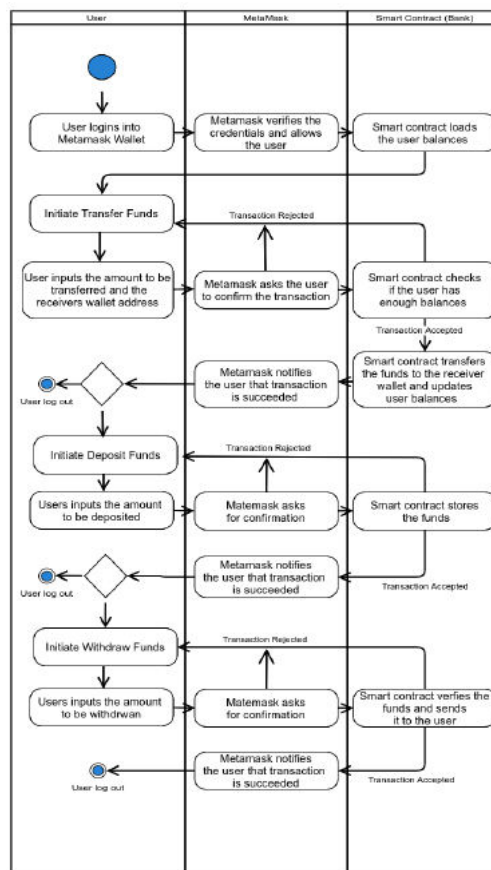


Fig. 1. The Flow of process

Cryptocurrencies are typically purchased on cryptocurrency exchange platforms and stored in secure crypto-wallets such as Metamask or Ledger. These digital currencies are decentralized and run in a highly secure manner. All you'll need is a computer or a smartphone, as well as an internet connection.

Cryptocurrencies are completely free of the control of third parties. This decentralized nature minimizes human interactions, which makes them free from biases. Cryptocurrencies don't judge or profile you, centralized banks do.

### IV. PSEUDO CODE

Step 1: User logs in using Metamask.

  if (user == admin)

    Admin dashboard is loaded

  else

    Customer dashboard is loaded

  end

Step 2: Customer initiates a deposit action.

Step 3: Metamask asks the user to approve the allowance for smart contract to access his tokens.

Step 4: Customer approves the allowance.

Step 5: Metamask verifies if the customer has enough balances and asks customer to confirm transaction.

Step 6: Customer confirms the transaction.

Step 7: Deposit is succesful and customer balances are updated.

Step 8: End.

### V. SIMULATION RESULTS

Once webpage is loaded, Metamask popups and asks to connect the wallet to the app, the user enters his credentials and log in. If the user is a customer, then he can perform the following the actions like Transfer Funds, Deposit and Withdraw Funds, Claim rewards. If the user is a owner, then he can perform the following actions like Issue tokens to the investors to the bank, Issue rewards to the customers deposited in the smart contract, Check the bank reserves.
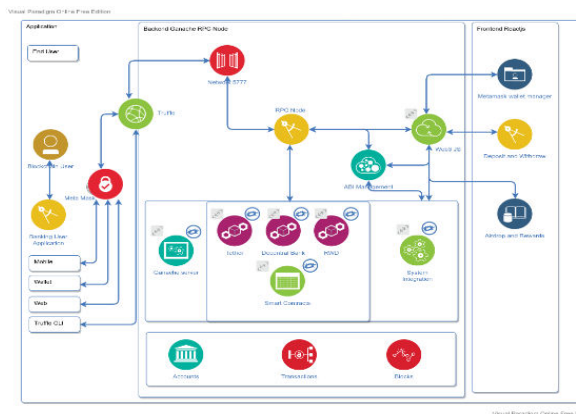

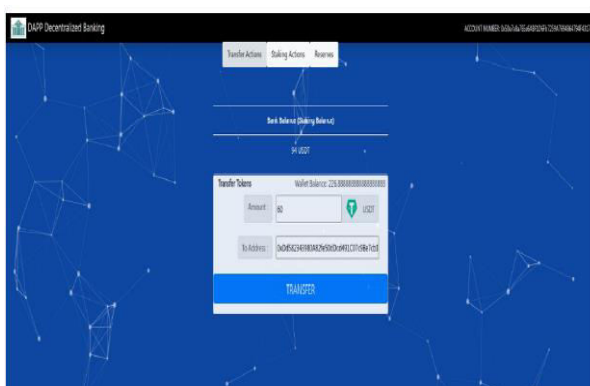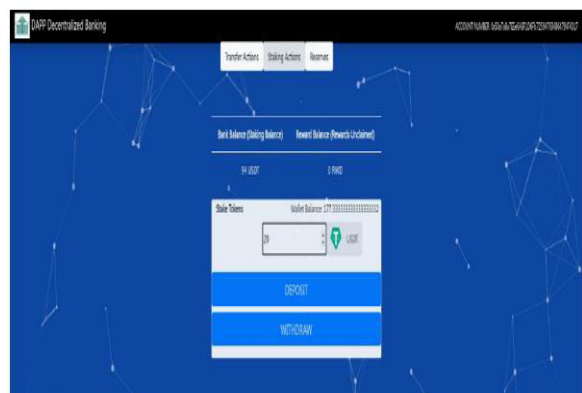
Fig. 2. The System Architecture



Fig.3.TransferActions



Fig.4. Deposit and Withdraw

## VI. CONCLUSION AND FUTURE WORK

Decentralized Banking platforms are more than just a plug-in for existing banks; they offer an alternative system. Because access to important information is not dependent on centralized processing or a prior relationship, transaction onboarding and market-based risk assessments are considerably easier to scale across a business' wider system. Prior to Decentralized Banking, a company had to execute anti-money laundering and "know your customer" checks for each source of capital, as well as persuade their counterparts to join the same transaction banking programmes. They would also be unable to offer evidence of debt or payables performance outside of financial statements.

Decentralized Banking enables for the secure flow of data across a system, removing these impediments to commercial finance services. Because of the volatility of crypto-assets, regulatory uncertainty, and the immature technology involved, most organizations did not seriously consider Decentralized Banking as a viable alternative to their bank's services until now.

Most banking systems needs to verify their customers authenticity through some means like KYC (Know Your Customer) which can take long periods time or days to be completed. But with blockchain we cloud verify the digital identity of a person using some hash based methods.

This project can also be upgraded to support lending and borrowing actions, where the users can lend and borrow money using blockchain.

We can also include a transactions log, by subscribing to the transfer events and store them in a database and present them to the users using the bank.

Even though Metamask verifies the user credentials, we can introduce a login and signup functionality such that a user must signup and login to access the app.

## REFERENCES

1. Lee D K C, Lim C. Blockchain use cases for inclusive FinTech: Scalability, privacy, and distribution. 2019, https://ssrn.com/abstract=362913510.2139/ssrn.3629135Search in Google Scholar

2. Glaser F. Pervasive decentralization of digital infrastructures: A framework for blockchain enabled system and use case analysis. 50th Hawaii international conference on system sciences (HICSS 2017), Waikoloa, 2017.10.24251/HICSS.2017.186Search in Google Scholar

3. Cuellar Benavides J P. Blockchain: Decentralization as the future of microfinance and financial inclusion. HEC Paris, 2019.Search in Google Scholar

4. Consensys. Blockchain in Financial Services. https://consensys.net/blockchain-use-cases/finance/Search in Google Scholar

5. A Alesina, La Ferrara, E - Who trusts others? Journal of Public Economics, volume 85, p. 207 – 234
Crossref

6. J Duarte, S Siegel, Young, L. Trust and credit: The role of appearance in peer-to-peer lending. The Review of Financial Studies, volume 25, issue 8, p. 2455 – 2484.
Crossref

7. S Freedman, Jin, G Z The Information Value of Online Social Networks: Lessons from Peer-to-Peer Lending International Journal of Industrial Organization, volume 51, p. 185 - 222
Posted: 2017 Crossref

## BIOGRAPHY

**Dr. P.L Kishan Kumar Reddy** is a Professor working in Information Technology, Vasireddy Venkatadri Institute of Technology. He received B. Tech degree from JNTU Hyderabad, India 1999. He received Masters from ANU, India 2006. He completed Ph.D degree from JNTU Anantapur, India 2018. His research interests include Machine Learning, Cybersecurity, Networks and Databases.

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