Decentralized Finance (DEFI) Using Blockchain Technology

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ABSTRACT

Decentralized Finance (DeFi) has emerged as a transformative force within the financial landscape, leveraging blockchain technology to redefine traditional banking and investment paradigms. This paper introduces the concept of the "DeFi Coin Vortex," a revolutionary mechanism that harnesses the power of decentralized networks to create a seamless, trustless, and inclusive financial ecosystem.

The DeFi Coin Vortex operates on the principles of transparency, security, and accessibility, utilizing smart contracts and blockchain infrastructure to eliminate intermediaries and empower users with unprecedented control over their financial assets. This decentralized financial system by empowering individuals with peer-to-peer digital exchanges.

Keyword- *Cryptocurrency, Smart contract, Application of Blockchain, Ethereum.*

INTRODUCTION " Blockchain Technology" is a technique where records of transactions made by Ethereum or another cryptocurrency are stored in blocks and maintained on all computers connected in a peer-to-peer network. It secures the transactions in such a way that any record of transactions that occurred in the past cannot be modified, as the modification changes the hash of several blocks. All the peers connected to that system do not support that modification, excluding the modifier (Wang et al., 2019). Ethereum is a cryptocurrency-based system based on blockchain technology with the currency "Ether" as its name. Ethereum is a platform that allows people to create decentralized applications or adopt them for short periods, and Ethereum clients will be developed (Wood, 2014), (Nakamoto, 2008). It can construct trustworthy and transparent financial apps since it is built on the blockchain. An online, cryptographically secure system that lets individuals preserve ownership of their data benefits from managed property and contracts, social networking, and messaging platforms (Ethereum Community, 2016). Cryptocurrency is a digital or virtual currency that may be used to make payments. So, cryptocurrency is the same as traditional money, except that it does not have a physical form. Its operation is reliant on cryptography as well. One of the hallmarks of cryptocurrencies is that they have a finite number of units (Chuen et al., 2017). Cryptography is a means of securing communication in the presence of third parties by combining encryption and decryption (Eyal, 2017). The mining process of almost every cryptocurrency system consumes a considerable amount of energy, which is not bearable for most countries worldwide. This mining also takes a long time to verify transactions.

Moreover, most of these systems are not open-source. Therefore, Ethereum removes all these deficiencies and is open-source, meaning developers worldwide can use this system in different aspects, making it preferable over all other blockchain based systems. This Ethereum protocol can be used to secure any virtual transactions because blocks containing transaction records cannot be changed in any way (Nakamoto, 2007). Economic transformation, Internet development, and financial innovations are affected by blockchain technology using Ethereum. In the banking industry, blockchain technology is a fundamental technology with a wide range of potential applications.

The banking system can be automated using the Ethereum blockchain so there would be no room for anomalies. Furthermore, no transaction history can be changed and the bank balance in the ethereal wallet cannot be increased or decreased (Nguyen, 2016). In addition, the user will not need to stand in a long queue to perform any transactional operation.
This project aims to provide a powerful network with higher security for the banking sector using one of the most recent trending technologies, blockchain, and a popular cryptocurrency called Ethereum, and change the way transactions are processed by eliminating third parties and replacing them with multiple blocks connected instead of processing them as one entire block as in the traditional method.

LITERATURE REVIEW

[1] DECENTRALIZED FINANCE: A BLOCKCHAIN-BASED FINANCIAL SYSTEM

Authors- Vincent Gramlich, Tobias Guggenberger, Marc Principato, Benjamin Schellinger

DeFi refers to an innovative banking and financial system replicating traditional financial services and tools while eliminating trusted centralized institutions. DeFi has the potential to not only bring the benefits of blockchain and smart contracts to traditional finance, but also to improve existing infrastructures, markets, services and tools. DeFi consists of multiple layers. Blockchains, which store programming code, form the basis for the next layers of DeFi. While native assets come from the blockchain, non-native assets are often referred to as tokens implemented using smart contracts. They are provided by standardized token formats that cover many cases. The protocol layer consists of such smart contracts.

The two most widespread types of DeFi-based applications are decentralized exchanges and lending protocols, while there are various types of DEXs, the most common being automated market makers (AMMs). AMMs rely on liquidity pools where users can provide liquidity to trading pairs that other users can trade with. In addition, the ratio of liquidity pool size to trade size determines the spread caused by that trade, so liquidity size is a critical factor for AMM. Meanwhile, lending protocols work very much like money markets in traditional finance, where lenders can provide funds to receive interest. The counterparty can borrow funds against some form of collateral that must be posted, after which it pays interest on the borrowed funds. Interest curves determine interest rates for lenders and borrowers based on the ratio of supply and demand.

[2] IMPROVING BANKING TRANSACTIONS USING BLOCKCHAIN TECHNOLOGY

Authors- Mamun Ahmed, Saha Reno

This research shows how they developed a private and confidential blockchain-based storage and banking exchange platform. A few authorized users will be able to hold and operate network nodes on this platform. This platform will

remove the need for a trusted third party, which is a third entity through which various transactions and financial information must flow. For starters, their platform will remove third-party trust, support user-to-user transactions, and ultimately record banking transaction data on the blockchain. This document also states that the blockchain platform will allow users to make safe and confidential transactions with lower costs and without the exchange ban due to the maximum amount that cannot be exceeded, as in the case of banks.

The cryptographic nature of blockchain ensures the confidentiality and integrity of sensitive financial information and protects against unauthorized access and manipulation. Additionally, the decentralized nature of blockchain eliminates the need for a central authority, reducing the risk of a single point of failure and increasing resilience. Overall, the adoption of blockchain in banking transactions improves transparency, security and efficiency while reducing operational costs. It creates a trusted and automated framework for financial interactions and lays the foundation for a more resilient and innovative banking industry.

[3] DECENTRALIZED FINANCE DEVELOPMENTS AROUND THE WORLD

Author- Peterson K. Ozili

This section summarizes the development of decentralized finance around the world using available author speeches, media articles, opinion pieces, conference papers, consultation papers, policy reports and academic papers retrieved from the article search. Articles must have "decentralized finance" in their title to be eligible for review in this section.

Africa Region – Proponents of decentralized finance in Africa such as argue that decentralized finance can facilitate better access to financial services and accelerate financial inclusion in African countries. he further argues that smart contracts and decentralized blockchain can create entire industries in Africa with products developed to address various needs in many African countries. It can also facilitate smart contracts in many activities that are still done manually in African countries, such as employment contracts, leases, payments, online retail, freelance contracts and cross-border transactions.

The Oceania region - Australia is one of many countries that are enthusiastically embracing new technologies. [18] showed that several Australian decentralized finance projects such as Rocket Pool, Ren and Stable emerged in 2020. Rocket Pool is 128 Journal of Banking and Financial Technology

a decentralized Eth2 staking service that allows users to run their own validator on the blockchain. Ren is a decentralized way to create tokenized bitcoins and other coins that can be used in decentralized finance. Stable allows users to exchange USD stablecoins with zero slippage and earn high returns.

Asia Region – Asia has high levels of digital literacy, mobile internet connectivity and a generation of digital savvy consumers, creating an opportunity for the adoption of decentralized finance. In India, decentralized finance is emerging as a crypto-innovation. Currently, India is ranked "sixth" in adoption of decentralized finance according to Global DeFi 2021. Proponents of DeFi in India say decentralized finance will extend decentralized financial services to millions of unbanked Indian adults and provide low-cost lending and borrowing alternatives to Indian citizens, but there are concerns that the government's ban on all blockchain-enabled cryptocurrencies would backfire. private sector efforts to grow the decentralized financial sector in India.

[4] DECENTRALIZED FINANCE SINGLE-CHAIN ECOSYSTEM INSIGHTS

Authors- Eva Andrea Meyer, Isabell, Phillipp Sandner

Like traditional finance, DeFi suffers from financial fraud constructs. A significant scam copied into the world of smart contracts is the “Ponzi scheme”, i.e. “high-yield investment schemes” in which the return of investors comes only from the investments of other customers who join the scam. Ponzi schemes identifying and analyzing on Ethereum and employing a machine learning based detection model.

To prevent Ponzi schemes, Bartolutti et al. (2020a) advises investors to review the fund's advertising for overly enticing terms and analyze contract code and transaction logs for fraudulent patterns using, for example, the detection tools described above. Another financial fraud is "wash trading" in which a

a group of traders (or one trader with multiple accounts), trades within their own cycles without eventually they change positions. They thus manipulate the sentiment of the tokens with high trading volumes (Victor and Weintraub, 2021). The authors discovered this while analyzing the transactions of two Ethereum DEXs 30% of tokens have already been traded on both DEXs and 10% of tokens on one of them were subject exclusively to laundry trading.

[5] DECENTRALIZED FINANCE ELIMINATES THIRD PARTIES, AND REGULATION

Authors- Aziz Perdana, Erick Imaran HU, Rianto

Eliminate the need for third parties (banks and financial institutions), in financial transactions can lead to lower fees, faster transaction times and greater financial inclusion. However, the absence of third parties can also be a weakness of DeFi. Without the oversight and regulation provided by traditional financial institutions, there is a higher risk of fraud or mismanagement within DeFi projects. It is important for users to thoroughly research and evaluate the risks and potential downsides before using DeFi platforms. The lack of regulation in the decentralized finance (DeFi) ecosystem can be a strength as it allows for greater innovation and creativity. Unconstrained by traditional regulatory frameworks, DeFi projects have the freedom to experiment with new ideas and technologies.

PROPOSED SYSTEM-

Decentralized Finance (DeFi), uses emerging technology to remove third parties and centralized institutions from financial transaction. DeFi is all about code with smart contracts. The terms and conditions of a transaction are also transparent and availability as code. It creates a unique opportunity for anyone with a computer and internet connection to participate in the global economy, Defi's smart contract, certain financial transaction is executed after specific condition are met. The smart contract allows for borrowing, lending, and more and terms of the transaction are literally written in the code. While that makes these transactions easy to use and more efficient.

CONCLUSION-

The system in place ensures that the system will never face any financial loss at any cost. It is a detailed improvement of the old manual banking system. The test result shows that this system will not be crushed. The use of the USD as a transaction unit ensures that this system can be used worldwide in the banking industry. Banks can follow this Ethereum based banking system to make their banking systems more automated and secure for their users and shareholders**.**

REFERENCES-

[1] Brennecke, M., Guggenberger, T., Schellinger, B., & Urbach, N. (2022). The De-Central Bank in Decentralized Finance: A Case Study of Maker DAO. In T. Bui (Ed.): Proceedings of the Annual Hawaii International Conference on System Sciences, Proceedings of the 55th Hawaii International Conference on System Sciences. Hawaii International Conference on System Sciences

[2] Arantes, G. M., D'Almeida, J. N., Onodera, M. T., Moreno, S. M. D. B. M., & Almeida, V. D. R. S. (2018, July). Improving the process of lending, monitoring and evaluating through Blockchain Technologies: An application of Blockchain in the Brazilian Development Bank (BNDES). In 2018 IEEE International Conference on Internet of Things and IEEE Green Computing and Communications (Green Com) and IEEE Cyber, Physical and Social Computing (CPS Com) and IEEE Smart Data (Smart Data) (pp. 1181–188). IEEE. Castles, A. (2017). How Sydney blockchain startup Hash Kloud scored partners.

[3] Ozili PK (2018) Impact of digital finance on financial inclusion and stability. Borsa Istanbul Rev 18(4):329–340.

[4] Ozili PK (2022) Decentralized finance and cryptocurrency activity in Africa. CSEF 109:1–13.

[5] Chen, W., Zheng, Z., Cui, J., Ngai, E., Zheng, P., and Zhou, Y. (2018). "Detecting Ponzi schemes on Ethereum: Towards healthier blockchain technology." In: Proceedings of the 2018 world wide web conference, Lyon, France, 1409–1418.

[6] Chen, W., Zheng, Z., Ngai, E. C.-H., Zheng, P., and Zhou, Y. (2019b). "Exploiting Blockchain Data to Detect Smart Ponzi Schemes on Ethereum." IEEE Access 7, 37575–37586.

[7] A. P. Mirko Staderini, Andrea Bonda Valli, "Security Evaluation and Improvement of Solidity Smart Contracts,"

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