

Decentralized Finance Using Block chain

Rajesh Todalbagi ^{a,*}, Sundar UM ^a, Saurav Taleda ^a and Sheela SV ^b

a. Student at BMSCE, Bangalore, India
 b. Professor at BMSCE, Bangalore, India
 *rajesh.is18@bmsce.ac.in

Abstract:

Decentralized finance (DeFi) is blockchain-based financial infrastructure that has recently gained huge popularity. DeFi provides promising financial structures that prioritize segregation and segregation of people to empower individuals or systems. DeFi apps give users more control over their money through personal wallets and personalized trading services. While removing control from foreign companies, publicly divided funds do not provide anonymity. Your activities may not have your name, but they are tracked by accessible businesses. These businesses may be government, legal, or other entities available to protect people's financial interests. 'DeFi' is an emerging term for some peer-to-peer financial services without a central authority — meaning 'fixed fees.' These may include online wallets, borrowing, lending, spot trading, gene trading, interest. -income, market performance, and other outputs. It is safe to say that the loan, in DeFi's opinion, does not involve a mortgage but rather all assets are digital. For example, one might offer Bitcoin as collateral for borrowing certain stablecoin (such as the digital version of the American dollar, created by a middle-class business or established in the form of a segregation of people). Once stablecoin has been borrowed, it can also be used as a currency, for example, to buy Bitcoin, thus establishing a long-term position in Bitcoin, without any central direction.

1. Introduction

Decentralized finance emerging financial technologies based on distributed securities such as those used for cryptocurrencies. The system removes banks and regulatory institutions from finance, financial products, and financial services. Decentralized finance (DeFi) is blockchain-based financial infrastructure that has recently gained huge popularity. DeFi provides promising financial structures that prioritize segregation and segregation of people to empower individuals or systems. The term Decentralized usually refers to a limited, open and integrated protocol stack built into public forums, such as Ethereum. Fragmentation eliminates intermediaries by allowing individuals, retailers, and businesses to perform financial transactions with emerging technologies. This is achieved through peer-to-peer financial networks that use security agreements, communications, software, and hardware development. From anywhere you have an internet connection, you can borrow, trade, and borrow using software that records and verifies distributed financial transactions. financial details. Distributed database is available at various locations; collects and compiles data from all users and uses the compliance method to verify it. Fixed funds use this technology to eliminate medium-sized financial models by allowing anyone to use financial resources anywhere no matter who or where they are. DeFi apps give users more control over their money through personal wallets and personalized trading services. While removing control from foreign companies, publicly divided funds do not provide anonymity. Your activities may not have your name, but they are tracked by accessible businesses. These businesses may be government, legal, or other entities available to protect people's financial interests.

DeFi lending facilities require agents to submit security deposits in order to fully compensate opposition parties for the disappearance of the agent. We assume that if an economically sound agent is faced with a choice between paying off a debt or losing a mortgage In the absence of shadow tracking — due to the agent's pseudonym and the possibility that the agent is using multiple addresses — the agent will choose the less expensive option.

Of all DeFi protocols, the ones with the most locked loans are for lending. As of April 15, 2020, the largest protocol for the capital letter, Maker, has c. 65% of total locks on DeFi, corresponding to 342.9m USD . Governance is another important aspect of DeFi principles and we see different levels of distributed governance. For example, the manufacturer uses its own token to allow owners to vote for a contract using the rules of governance. In contrast, Compound, the third largest market share protocol, is governed by a single location and a single account can shut down a system if it fails. Moreover, as with traditional finances, these agreements are not unique. Manufacturers created by the Manufacturer, for example, can be used as collateral in other agreements such as Compound, dYdX or in Uniswap investment pools. Indeed, the integration of DeFi - the ability to create complex, multi-component financial systems.

'DeFi' is an emerging term for some peer-to-peer financial services without a central authority — meaning 'fixed fees.' These may include online wallets, borrowing, lending, spot trading, gene trading, interest. -income, market performance, and other outputs. It is safe to say that the loan, in DeFi's opinion, does not involve a mortgage but rather all assets are digital. For example, one might offer Bitcoin as collateral for borrowing certain stablecoin (such as the digital version of the American dollar, created by a

middle-class business or established in the form of a segregation of people). Once stablecoin has been borrowed, it can also be used as a currency, for example, to buy Bitcoin, thus establishing a long-term position in Bitcoin, without any central direction

2. Motivation

DeFi is still a untapped market with low prices - however, these numbers are growing fast. DeFi eliminates bills charged by banks and other financial companies through their services. The concept of ownership is divided into controlled areas and smart contracts. The amount of funds locked in smart contracts related to DeFi recently exceeded 10 billion USD. It removes bills from banks and other financial institutions through their services. You keep your money in a secure digital wallet instead of keeping it in a bank. Anyone with an Internet connection can use it without the need for permission. You can transfer funds in seconds and minutes. Established finance, or DeFi, uses emerging technologies to exclude foreign companies from financial activities. DeFi components are stable coins, software, and hardware that enable software development. DeFi's infrastructure and controls are still being developed and are still being discussed.

Blockchain can solve a lot of real world problems and offer a better business model and economic structure for all of us. According to reports, global spending on blockchain is estimated to go up and is expected to cross \$15.9 billion by 2023. Furthermore, almost every single industrial section is looking to adopt blockchain technology and reap its benefits. This starts for the expected fintech companies, to even the media industries and health care.

Mainstream payment functions as a government or bank as a third party, keeping concentration of power. One of the prospective applications of Blockchain technology is to improve existing Financial Systems in payment processes. If a platform as a service is established and supplied as an alternative choice based on blockchain technology as its primary foundation, a decentral network might eliminate the intermediar. A platform like this would allow users to conduct direct and secure money transactions.

3. Scope

One of the key benefits that block chain brings to Supply Chain Management would be interoperability. The transparency in data sharing makes sure that everyone is on the same page. There is an ever-growing list of things you can do with block chain.

Some of the real world problems that can be addressed with block chain are Slow cross-border payments, Accountability issues in traditional contracts, Mismanagement in health care organizations, Slow government systems and public sectors, Inadequate real estate assets, Costly supply chain management, Vulnerable identity management and theft, Digital copyright and piracy, Corrupted crowd funding and fundraising, Unfairness in sports and sports.

4. Existing System

Prior to the concept of segregation, CeFi was one of the most flexible technologies combining some of the benefits of DeFi as well as the comfort and security of standard financial services products. In order to understand centralized finance, we need to understand what centralization is. A single design process means the integration of planning and decision-making processes inside an organization with a single leader or area. In the central institution, the head office retains the decision making authority, while all sub offices take instructions from headquarters. The main office is occupied by managers and professionals who make significant decisions. All crypto trading orders are shipped through CeFi. Money is controlled by the people in charge of this change. This means that a person cannot access his or her wallet as they do not have a secret key. In addition, the exchange selects what types of currencies are available for trading and how much users have to pay on payments in order to trade in their area. Some examples of real-time available are:

Fairlay: Bitcoin Prediction Market and Exchange based on the concept of CeFi.

BlockFi: Is a borrowing and lending platform for bitcoin and fiat.

Celsius: A platform for bitcoin borrowing, payments, and lending.

Ledn: Bitcoin and lending platform for DAI. Libra: A global financial infrastructure platform with a cryptocurrency overlay.

5. Problem statement

The current state of payments through banking channels is a tedious. It is a multistep process that involves a lot of intermediaries. Furthermore, each step of the process takes a lot of time and also requires a hefty amount of money. In fact, according to the World Bank, the average transaction fee for worldwide payments is around 7%. That's a lot! Block chain helps streamline the entire process by cutting out any and all middlemen and lengthy procedures, thereby the burden of unnecessary time delays. Developing an Ethereum Block chain based Decentralized Finance, in which we demonstrate how a decentralized system based on consortium block chain can be developed to keep track of money and money related markets without the central authority.

A decentralized finance application based on block chain technology can improve the user experience by providing feasibility in payment and money related issues. By using its secure and sophisticated distributed ledger, once a transaction gets recorded, the

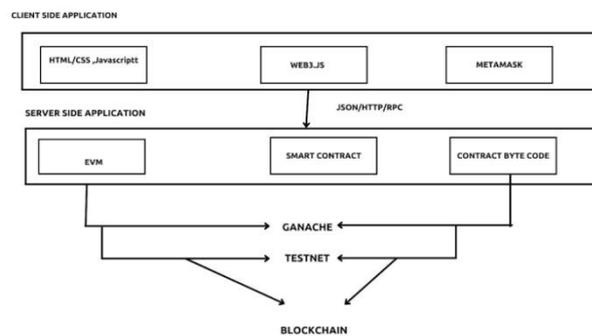
payment is almost instantaneously transferred to the receiving party. Since the transaction can't be reversed or changed, it also ensures better accountability and security than the currently employed system.

6. Proposed system

The current system programs involve more people thus reducing visibility. DeFi uses smart contracts to create agreements that can replace existing financial services in a more participatory, and transparent manner. DeFi does not rely on third parties and intermediate institutions. Instead, DeFi is based on open protocols and extended applications (DApps). Records used in current systems can be exchanged by a single administrator, and DeFi structures can create a consistent and significantly transparent financial system with huge transparency, equal access rights using "smart contracts". DeFi uses blockchain to simplify solutions for traditional service providers and market infrastructures. DeFi provides opportunities for innovation and the creation of new methods to enhance the efficacy of the existing financial system.

7. Architecture

System Architecture consists of Aggregation, Application, Gateway, Asset and Settlement as layers. Here the transactions are updated in the Blockchain Distributed Ledger layers consisting of various features such as Credit, Derivatives, Insurance, Decentralized Exchange. Aggregators consist of DEX Aggregators, Assets and yield Management. These are directly connected



to transaction ledger and provide a block chain Infrastructure. A customer intractable webApp is written on web3 using HTML, CSS, JS and more technologies. Metamark is real-time open source wallet management software built over block chain technologies to track the balance, staking, unstaking etc. Dapp consists of a web3 website type, customer usable website built with frontend and backend technologies (HTML, CSS, JavaScript). Dapp consists of block chain technology with a connected network with many nodes and data integrated with many validated transactions. Smart contracts are written for forming rules and transaction validations. Using all of the components mentioned, a finance decentralized application is designed with a blockchain network. Using HTTP, RPC protocols, API calls are sent to server side applications, where smart contracts which are rules for block chain network and contract byte codes compiled versions make transaction validations. All the balance of an account can be checked, tested, validated with Ganache testnet which is a test suite for the block chain network.

8. Evaluation

```
C:\DeFi_Capstone>truffle test
Using network 'development'.

Compiling your contracts...
-----
> Compiling .\src\contracts\DaiToken.sol
> Compiling .\src\contracts\DappToken.sol
> Artifacts written to C:\Users\RAJESH-1\AppData\Local\Temp\test--2348-3zNRIh24IHS1
> Compiled successfully using:
   - solc: 0.5.16+commit.9c3226ce.Emscripten.clang

Contract: TokenFarm
Mock DAI deployment
  ✓ has a name (147ms)
Dapp Token deployment
  ✓ has a name (118ms)
Token Farm deployment
  ✓ has a name (72ms)
  ✓ contract has tokens (96ms)
Farming tokens
  ✓ rewards investors for staking mDai tokens (2595ms)
truffle(development)>
```

Image showing test cases run during various stages of deployment.

9. Conclusion

We are seeing an increase in the number of new financial capabilities through the introduction of distributed leveraging technologies. For the first time in history, the global financial system of the global population is shaped by that population. Everyone can participate in the governance of DeFi agreements and gain a seat at the table where the world of distributed finance is created. DeFi's space is increasingly in line with the traditional financial system and despite certain obstacles while operating on the brink of innovation, the financial sector divided into regions is on its way to success. Over time, it is difficult to predict how this space will stand when the capacity to build financial resources will be democratic. However, in an area where DeFi and fintech maps also meet, we will have a flexible environment where emerging financial technologies are part of the new financial system. One who realizes the dream of speed, security, availability, and equality.

REFERENCES

- [1] Fabian Schär “Decentralized Finance: On Blockchain and Smart Contract-Based Financial Markets” University of Basel - Economics Department (Second Quarter 2021).
- [2] University of Pennsylvania “DeFi Beyond the Hype - The Emerging World of Decentralized Finance” Wharton School University of California, May 2021.
- [3] Usman W. Chohan “Decentralized finance (DeFi): an emergent alternative financial architecture” UNSW Business School, 26th January, 2021.
- [4] Giulio Caldarelli and Joshua Ellul “The Blockchain Oracle Problem in Decentralized Finance—A Multivocal Approach” Department of Business Administration, University of Verona, 18th August 2021.
- [5] Dirk A. Zetzsche, Douglas W. Arner and Ross P. Buckley “Decentralized Finance” Journal of Financial Regulation, 30 Sept 2020.
- [6] X. Meegan and T. Koens “Lessons Learned from Decentralised Finance (DeFi)”
- [7] Ryan Garner, Lachlan Webb, Jason Potts and Chris Berg “Tracer: Peer-to-Peer Finance” Royal Melbourne Institute of Technology, 15 Feb 2021.
- [8] Johannes Rude Jensen, Victor von Wachter and Omri Ross “How Decentralized Is The Governance Of Blockchain-Based Finance?”, University of Copenhagen, February 2021.
- [9] Matthew Leybold “Decentralized Finance (DeFi) in 2020 and its future trajectory” 27 Nov 2020. - <https://www.linkedin.com/pulse/decentralized-finance-defi-2020-its-future-trajectory-matthew-leybold/>
- [10] Aleksander Berentsen and Fabian Schar, “A Short Introduction to the World of Cryptocurrencies,” Federal Reserve Bank of St. Louis Review, First Quarter 2018, pp. 1-16. <https://doi.org/10.20955/r.2018.1-16>
- [11] Nat Maddrey “Ethereum's DeFi Evolution: How DeFi is Fueling Ethereum's Growth”, CoinMetrics - https://coinmetrics.io/ethereums-defi_x0002_evolution-how-defi-is-fueling-ethereums-growth/.
- [12] Michael Oved and Don Mosites “Swap: A Peer-to-Peer Protocol for Trading Ethereum Tokens” 21 Jun 2017.
- [13] Dr. Gavin Wood “Ethereum: A Secure Decentralised Generalised Transaction Ledger” <https://ethereum.github.io/yellowpaper/paper.pdf> 2021-12-02.
- [14] Carlos Castro Irigorri, Julian Ramirez and Sebastian Velez - “Financial intermediation and risk in decentralized lending protocols”. Rosario University, 26 Jul 2021.
- [15] Sam M. Werner, Daniel Perez, Lewis Gudgeon, Ariah Klages-Mundt, Dominik Harz and William J. Knottenbelt. “SoK: Decentralized Finance (DeFi)” arXiv:2101.08778v1 ResearchGate 6 Sept 2021.
- [16] DUSKO KNEZEVIC “Impact of Blockchain Technology Platform in Changing the Financial Sector and Other Industries”. MONTENEGRIN JOURNAL OF ECONOMICS, 15 Mar 2018.
- [17] Simon Fernandez Vazquez, Rafael Rosillo, David De La Fuente and Paolo Priore “Blockchain in FinTech: A Mapping Study” Business Management Department, University of Oviedo, 13 Nov 2019.
- [18] Haitian Lu, Bingzhong Wang, Qing Wu and Jing Ye “Fintech and the Future of Financial Service: A Literature Review and Research Agenda”, The Hong Kong Polytechnic University, 18 Aug 2020.
- [19] Samuel Fosso Wambaa, Jean Robert Kala Kamdjoug, Ransome Epie Bawack and John G. Keogh - “Bitcoin, Blockchain and FinTech: A Systematic Review and Case Studies in the Supply Chain”. <https://ssrn.com/abstract=3281148> 6 Dec 2018.