



DECENTRALIZED FINANCE USING BLOCKCHAIN

¹Nischal Nandurkar, ²Samyak Bendre, ³Yash Darvankar, ⁴Vishal Durge, ⁵Pooja Dhoke ⁶Prof. Anand Donald

B.E Student, department of computer science and engineering Rajiv Gandhi College of Engineering Research and Technology, Chandrapur, India.

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structure of modern finance by creating a new landscape for innovation.

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INTRODUCTION

Summary/Abstract:

Currently, in the world there is a growing interest in digital economy including the blockchain technology. Decentralized finance is one of the leading current blockchain technology.

Blockchain Technology can enhance the basic services that are essential in traditional finance and it has the potential to become the foundation for decentralized business models, empowering entrepreneurs and innovators with all the right tools. By means of a trustless and distributed infrastructure, blockchain technology is optimizing transactional costs and allows the rise of decentralized, innovative, interoperable, borderless and transparent applications which facilitate open access and encourage permissionless innovations. DeFi stands for “Decentralized Finance” and refers to the ecosystem comprised of financial applications that are being developed on top of blockchain and distributed ledger systems. The Decentralized Finance (DeFi) or Open Finance movement takes that promise a step further. Imagine a global, open alternative to every financial service you use today - savings, loans, trading, insurance and many others - accessible to anyone in the world only by means of a smartphone and internet connection. DeFi is the movement that leverages decentralized networks and open source software to create or transform old financial products into trustworthy and transparent protocols that run without intermediaries. This article will analyze several studies and researches on Decentralized Finance with focus on its features and subsets, intending to offer a synthesis on how the ecosystem is evolving and the way it may reshape the

With the intention to eliminate the need for financial intermediaries by creating a solely code-based, openly accessible, and transparent financial system, Nakamoto (2008) invented the Bitcoin blockchain—the first consensus-governed, decentralized database of cryptographically linked blocks storing and enabling borderless, trustless, all-time available, and digitally signed P2P-transactions. With the Turing-complete script language of the Ethereum blockchain, Buterin (2013) decisively evolved the idea and presented the first practical implication of ‘smart contracts’ (i.e., code-based agreements executed without human intervention), hence providing the technical foundation for ‘Decentralized Finance (DeFi)’—a finance ecosystem enabling complex financial products and transactions in a trustless and borderless manner (e.g., lending/borrowing,

derivatives (trading) and borderless stable assets). That this ecosystem is not only an idealistic idea of blockchain utopians but is to be taken seriously is, as of Nov, 5th 2021, reflected in i) Bitcoin's \$1,150bn market capitalization (CoinMarketCap, 2021a) exceeding the combined \$1,135bn market worth of the world's three highest valued banks¹, ii) the market capitalization of the main DeFi blockchain Ethereum with \$530bn—surpassing that of the highest valued bank¹ and growing tenfold within one year (CoinMarketCap, 2021b), as well as iii) the Total Value Locked in DeFi applications—growing by 26 times in three years from \$4bn to \$104bn (DeFi Pulse, 2021).

Based on several scholars' definition, we find that 'DeFi' refers to finance protocols i) built with 'smart contracts' (Gudgeon et al., 2020a; Zetzsche et al., 2020; Jensen et al., 2021) ii) which are 'trustless' (Chen and Bellavitis, 2020; Kumar et al., 2020; Werner et al., 2021), i.e., functioning without intermediaries (trusted third parties), and iii) developed on 'permissionless, public blockchains' (Chen and Bellavitis, 2020; Schär, 2021; Wang, 2020; Popescu, 2020). Figure 1 illustrates the scope of our review, whereas the following in-depth descriptions help to discriminate DeFi from non-DeFi but blockchain- and finance-related application fields: 'Smart contract-based': DeFi stems from but needs to be delineated from the field of non-smart contract based crypto-finance. Only with the introduction of smart contracts—programmatically enforced agreements (Schär, 2021)—the development of conditional, complex financial services was enabled. Similar delineation logic applies to related fields of (non-smart contract enabled) blockchain-native cryptocurrency specifics, e.g., price building of Bitcoin, or crypto-asset trading strategies. 'Trustless': While cryptocurrencies were invented to replace trusted third parties, in fact, most volume is stored and traded on 'centralized exchanges (CEXs)' (Cong et al., 2019), i.e., undermining the disintermediation aim (Zamyatin et al., 2019). Equally, the enhancement of banks' processes, new financial services still involving intermediaries (e.g., physically-, third party-backed stablecoins), as well as digital currencies issued by central banks or other third parties are not part of our definition of DeFi.

The advantages of decentralized finance are: the use of digital technologies; elimination of control from large financial institutions; accessibility of financial services; privacy; open software code; passive income; lower transaction cost.

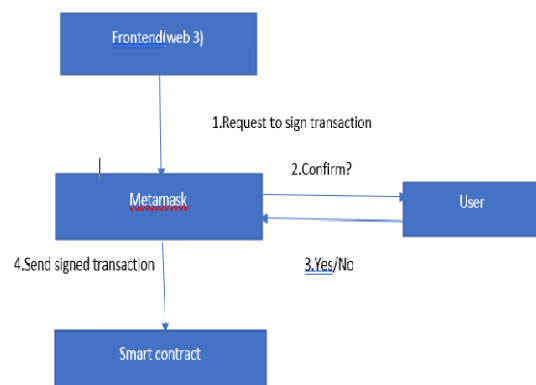
Some of the disadvantages of decentralized finance are: information shortage; lack of legal framework; lack of support; hacker attacks.

Today, nearly six years after its launch, the Ethereum blockchain hosts an [over \\$42 billion ecosystem](#) of decentralized applications that provide wide-ranging services previously available only to wealthy or institutional investors.

Start of DeFi

Bitcoin challenged our assumptions about money. For the first time in history, we can send and receive money to anyone, anywhere in the world without a centralised intermediary. The launch of Ethereum in **2015** as a smart contract development platform was the "AWS (Amazon Web Services) moment in crypto", enabling developers to build more complex financial applications like DeFi on top of it.

Working with smart contract:



2019 : YEAR OF DeFi

So far in the story of blockchain, every year can be distilled to one overarching trend. In 2009, the

narrative was Bitcoin. In 2015, Ethereum. 2017 brought the world initial coin offerings. The answer for 2019 is unmistakable: the decentralized finance movement was by far the most impactful trend within the crypto and blockchain ecosystem.

Google searches for “decentralised finance” surged 273% in 2019 compared to 2018, according to our [seo consultant: Victoria Olsina](#).

MakerDAO was the first protocol to create a means by which individuals could continue to speculate through collateralization. While MakerDAO vaults (formerly called CDPs) have enabled users to borrow dai using ether as collateral, new lending and borrowing protocols dominated much of the 2019 crypto narrative. Compound and Fulcrum both create pools of capital allowing users to lend or borrow cryptoassets including dai, USDC (Coinbase’s stablecoin), ether, and more.

Most recently, MakerDAO’s highly anticipated upgrade from single collateral dai (Sai) to multi-collateral dai (MCD) was successfully completed. The Maker protocol upgrade also came with a new dai savings rate (DSR), which provides interest to individuals who keep their dai in the Maker protocol. In the short term, the DSR is a smart contract that can be integrated into any other exchange and may become the base interest rate for the crypto DeFi space.

Financial systems operate through open markets and require robust mechanisms for trading and transferring value. The 2019 trading landscape was primarily [dominated by a few large players](#), predominantly Coinbase, Kraken, Gemini, Bitstamp, Bitfinex, and Binance. become the base interest rate for the crypto DeFi space.

[Initial Exchange Offerings](#) (IEOs) were incredibly popular in the first half of 2019, where a centralized exchange served as the platform for token sales. Essentially, An exchange acts as the gatekeeper for these token sales and only verified customers are allowed to participate. The token sales were usually conducted using an exchange’s token such as Binance Coin (BNB) which offers reduced trading fees and stock like buy-backs in which they burn tokens to effectively increase the price for holders. A [report](#) by Token Insights halfway through 2019 revealed the IEOs initial hype throughout the first couple of months of 2019 before slowly fading in popularity. While IEOs, ICOs, and STOs (security token offerings) have had their fair share of scams and misuses, the ability to raise capital is a necessary tool for any financial system.

Investing in cryptoassets has certainly evolved throughout 2019 and will continue to expand in the coming years. Speculation remains the most prominent use case for cryptocurrencies, however, many individuals perceive this trait as entirely negative. Tools and mechanisms for speculation are a vital component for any new asset class, especially an asset aiming to be the bedrock of an open financial system. One of the most important and subsequently hardest aspects to creating a new financial system is generating the necessary liquidity required for efficient investing.

Year 2020

The introduction of decentralised finance (DeFi) or open finance innovation has been a pivotal moment in the history of finance. It rose to prominence in the summer of 2020 with yield farming, the rise of tokens such as Compound and Sushiswap promising attractive yields to crypto traders.

According to DeFi Pulse, the total value locked in DeFi protocols is over \$78 billion — a growth of 10x since May 2020. This represents the current value of all

deposits locked in the form of cryptocurrency for lending, staking, liquidity pool and so on.

Year 2021

Ethereum, the core blockchain powering DeFi applications and the second largest cryptocurrency by market cap (\$345 billion), settled over \$11.6 trillion in transaction volumes surpassing Visa (the second largest payment processing company) in 2021. This is an emerging alternative financial infrastructure challenging traditional finance.

According to Dune Analytics, there are over 4 million unique addresses (proxy for users) using DeFi applications — a growth of over 40x in the **last 2 years**.

We are still in the nascent stage of DeFi, which is constantly evolving. There is innovation happening at every layer from core blockchain protocols, decentralised applications to front-end UI. Indian founders are addressing challenging problems in DeFi such as Layer 2 scaling solutions like Polygon and Biconomy and we at Gemba Capital are actively looking to invest in this space. DeFi is a massive opportunity to disrupt any financial contracts from derivatives (\$1 quadrillion), stock market (\$90 trillion) to insurance (\$6 trillion). And this is just the beginning.

