Understanding Decentralized Finance (DeFi) and How it's Changing the Global Financial Landscape

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ABSTRACT

The world has for a long time adopted a financial system where risk control is placed in the care of central authorities or intermediaries. People who invest in the current financial system relinquish their assets to intermediaries such as a bank, stock exchanges, mutual fund companies, insurance companies, and brokers. Many problems have arisen casting doubt on the effectiveness of the current financial system. An innovative system that introduces the prospects of removing banks' and other institutions' control over money, financial products, and financial services is emerging – decentralized finance (DeFi). An extensive study on the subject was done focusing on the viability of decentralized finance to replace the role of traditional financial systems using recently published reports. Decentralized finance, a financial ecosystem built on blockchain technologies, is geared toward disrupting the traditional finance world. The features of DeFi promise to revolutionize various financial transactions including DeFi lending and borrowing, decentralized insurance, and decentralized exchanges. DeFi strives to allow direct financial transactions between users minus the controls of any single entity. Being relatively new, even with all the opportunities it offers, DeFi may have a higher level of risk due to difficulties with regulation, infrastructural mishaps, and potential hacks and scams. Despite the hype around DeFi, it is prudent to understand not only the rewards but also the risks. Decentralized finance is in its early stages of evolution. As we move forward, many issues must be addressed and advancements made before DeFi becomes safe to use.

HIGHLIGHTS

- Decentralized finance is a very promising ecosystem that eliminates intermediaries by allowing people, merchants, and businesses to conduct financial transactions through emerging technology.
- DeFi offers plenty of opportunities, but at the same time it also has challenges that need to be addressed.
- Only when the weaknesses of the system are fully resolved can individuals, business firms, financial institutions, brokers, and other stakeholders truly take advantage of the emerging technology to make DeFi the finance ecosystem of the future.

Keywords: Decentralized Finance, DeFi, Blockchain, Crypto, Cryptocurrency, Banking, Centralized Finance, Decentralized Insurance, Decentralized Exchanges, DEX, Stablecoins, Yield Farming, Currency Purchase, Asset Management, Digital Currency

The current traditional financial system is centralized where risk control is not in the hands of people who invest but in a third party or intermediaries including the government, banks, and other institutions. Many times, there have been issues that cause the trust of investors in the system to be shattered and questions about the overall effectiveness of how financial services are being executed.

Decentralized finance, an innovative system based on blockchain technologies that allow direct financial transactions between users and eliminate the need for middlemen is emerging. It has a lot of promises and is believed poised to replace the role of traditional finance. Among other benefits, DeFi will effectively remove the control banks and other institutions have on money and financial products and services. This will be possible in many transactions including DeFi lending and borrowing, decentralized insurance, decentralized exchanges, asset management,

derivatives, trading events shares, prediction markets, yield farming, peer-to-peer financial transactions, and peer-to-peer lending.

With a lot of hype around DeFi and crypto, it is important to understand both its benefits and disadvantages including the potential issues with the new system before plunging into it. In this research, we shall attempt to validate the viability of DeFi as a more transparent and robust financial ecosystem to replace traditional centralized finance.

METHODS

The study primarily depended on secondary data from multiple existing data sources, literature, the Internet, and other research for different purposes. While decentralized finance is a current trend, it has not reached the stage of mass adoption yet more and more users are exploring its applications. The internet and publications abound with research materials on the subject.

Mostly qualitative, the data were checked for accuracy and updatedness by verifying and validating them against several published sources. The gathered data from each source, which are considered snapshots of the overall situation, were analyzed to be able to see the whole picture. Conclusions were then drawn and summarized. Coming up with first-hand data on the subject would be difficult and time-consuming because of the enormity of the research scope and limitations in resources and time.

RESULTS

DeFi provides value to millions of users after developing into a complete ecosystem of working applications and protocols. As of April 2022, assets worth over $239 billion were locked in DeFi ecosystems. It is one of the fastest-growing segments in the public blockchain space.

DeFi removes third parties in financial transactions effectively eliminating the control banks and institutions have on money and financial products and services. It also offers many advantages compared to the traditional financial system through some of its key features:

- It gets rid of fees charged by banks and other institutions for their services.
- You keep your money in a secure digital wallet instead of deposited in a bank.
- It can be used by anyone with an internet connection without needing approval.
- You can transfer funds in a matter of seconds or minutes.

The adoption of DeFi will allow many financial activities to be conducted in the public blockchain space. It will find applications in financial transactions including DeFi borrowing and lending, decentralized insurance, decentralized exchanges, derivatives, prediction markets, Stablecoins, yield farming, currency purchase, and asset management.

DISCUSSION

Banking is one of the oldest industries in the world. Banking, in the form we know today began in about 2000 BC in the ancient world.[1] Paper money, the major financial instrument in

business transactions, on the other hand, is an invention of the Song Dynasty in China in the 11th century, nearly 20 centuries after the earliest known use of metal coins.[2] What used to be a banking industry based on simplistic barter and gift economies of earlier times have since then evolved into a modern complex, globalized, technology-driven, and internet-based e-banking model. Today, e-banking is fast becoming the mainstream way of doing financial transactions.

Centralized Finance and Its Disadvantages

Until today, our modern financial system has been dependent on centralized power. Central authorities have issued currencies that support our economies. The power of monetary systems grew as people developed trust in those currencies. This trust has been shattered time and again, however, making people doubt the authorities' ability to manage said money.

Financial markets are the backbone of a country's economy that drives the prosperity of society and are essential for the growth and development of the nation. Power in these markets is also centralized. While financial markets act as a link between investors and borrowers and bridge the gap between them for mutual benefits making accessibility easy, the government controls the operations of a financial market in the country through the rules and regulations it imposes. When people invest in the current financial system, they relinquish their assets to intermediaries such as a bank, stock exchanges, mutual fund companies, insurance companies, brokers, etc. Risk and control are kept at the center of these systems.

There have been many occasions where bankers and institutions fail to manage the risks in the market. Our experience during the 2008 financial crisis was a catastrophic illustration of this. It is when central authorities control the money that risks accumulate at the center and endangers the system as a whole.

In centralized finance, your money is held by banks and other financial institutions whose primary goal is to make money. The financial system is full of third-party intermediaries who charge fees for their services as they facilitate money movement between parties. If you purchase a gallon of gas using your credit, for example, the merchant, acquiring bank, and the credit card network charge you for their services.

The network requests a payment from your bank after clearing the charges. Your bank approves the charge, and sends the approval to the network, through the acquiring bank, back to the merchant. When you use credit and debit cards, each entity in the chain receives payment for its services.[3]

Aside from purchases, all other financial transactions cost you money. Other downsides to centralized finance include loan applications that can take days to be approved and the possible inability to use a bank's services if you're traveling.[4]

Decentralized Finance

With the launch of cryptocurrency in 2009, Bitcoin, the first p2p digital asset built on top of the blockchain network, decentralized finance started.[5] The cryptocurrency had spectacular growth

but not the financial services for Bitcoin because of its price volatility. Significant changes in crypto have since happened. Decentralized finance is now a current trend and is being used in many new exciting ways.

Decentralized finance or DeFi is a financial system that reimagines financial transactions by removing intermediaries and is based on blockchain technology.[6] DeFi applications (dApps)typically use smart contracts, which are automated enforceable agreements that do not need intermediaries to execute. An internet connection is all that's needed to perform financial transactions and other activities.

How DeFi Works

Decentralized finance uses blockchain technology, the same technology that cryptocurrencies use. A blockchain is a distributed and secured database or ledger. Applications called dApps are used to handle transactions and run the blockchain.[3]

A block records some or all of the most recent transactions not yet validated by the network. Once the data is validated, the block is closed and encrypted. Then, a new block that has information about the previous block is created for new transactions to be entered into and validated.[7]

The blocks are "chained" together through the information in each proceeding block, hence the name blockchain. Information in previous blocks cannot be changed without affecting the following blocks, so there is no way to alter a blockchain. This concept, along with other security protocols, provides the secure nature of a blockchain.[8]

Advantages of DeFi

The decentralized finance ecosystem is built on blockchain technology that involves the use of a digital distributed ledger. The blockchain consists of a continuously growing list of records called blocks, which are linked and secured using cryptography. Its goal is to remove a centralized server or intermediary so that a decentralized network of computers can share and retain identical, cryptographically secured records.[9]

These are the main advantages of using decentralized finance:

1. Accessibility

DeFi transactions can be carried out without any geographical restrictions. With a DeFi platform, anyone with a moderate computer with an internet connection can have access. Users with the know-how can create and deploy DeFi products, while the blockchain and its distributed network of miners then proceed to effectively operate the DeFi application.[10]

2. Control

DeFi offers control to its users by enabling the user to remain the custodian of its assets, which means no one should be able to censor, move or destroy the users' assets, without the users' consent. DeFi applications give users more control over their money through trading services that cater to individuals and the use of personal wallets.

3. Transparency

One of the main qualities of Blockchain technology is transparency. All transactions, data, and code on the blockchain are transparent to everyone. This level of transparency builds trust among users.[11]

In DeFi, a user can inspect the precise rules by which financial assets and products operate. DeFi attempts to avoid private agreements, back-deals, and centralization, which are significant limiting factors of centralized finance transparency.[10]

4. Security

DeFi offers the highest level of security because of the immutable transaction capacity provided by blockchain technology, which eliminates the need for central banks to control all of this activity.[12] With no authorities involved, users do not have to worry about the security of their funds as they are in full control of them at all times.

5. Interoperability

Interoperability in the Blockchain world is when two blockchain systems can communicate with each other and exchange value. At this time, multiple DeFi platforms can already interact with each other safely. That's not to say however that there is still much to be done in this area.

Impact of DEFI on the Global Financial Landscape

Though unregulated, DeFi is believed to revolutionize the way we conduct financial transactions. The possibilities enable it to make it a very exciting space for crypto investors and anyone with a computer and internet connection to participate in the global economy.

DeFi eliminates the entry barrier for many financial transactions. The government, banks, and corporations are no longer needed in managing your money. You also don't need to qualify for certain financial products. With these features, DeFi is poised to change financial transactions in the following areas:

1. DeFi Borrowing and Lending

Decentralized lending allows users to lend cryptocurrency to others to gain annual yields while decentralized borrowing lets individuals borrow money at a specific interest rate. Smart contracts allow financial transactions such as peer-to-peer borrowing and lending to be executed after specific conditions are met. With the terms of the transactions written in the code, the transactions are easy-to-use and more efficient. Users don't have to wait to get their funds. The

protocols also remove the need for credit checks and intermediaries and enable users to borrow cryptocurrency wherever they are.

The yields generated by lenders in the DeFi ecosystem are substantially higher than the traditional financial system. Running a smart contract is much more cost-effective than running a traditional bank, nearly all of the yield generated from lending money is passed directly back to the lender via the smart contract. [13]

2. Decentralized Insurance

Many blockchain-based insurance policies in real-world scenarios like disasters and farming utilize a parametric insurance model. In this model, claims are paid to the party involved as specific parameters are met. Smart contracts could be utilized to pay the total value owed as soon as the damage occurs.

DeFi insurance can also cover blockchain-related activities such as losses incurred from an exchange hack. Ideal for those with significant amounts of crypto assets on an exchange, DeFi insurance can offer security for stablecoin investors in a price crash situation.

3. Decentralized Exchanges (DEX)

One of the essential functions of DeFi is decentralized exchanges (DEX). Users can exchange one type of currency for another like trading Ether for Euro and exchanging or swapping tokens with other assets without a central intermediary.

With a decentralized exchange like Uniswap, you can swap, earn, and build on the leading decentralized crypto trading protocol.

4. Derivatives

Derivatives allow users to deal with assets without buying them. In some cases, the user has the option not to buy the underlying asset. There are two types of derivatives. Lock derivatives are contracts in which the traders are bound to the terms that have been agreed upon for the duration of the contract's life. The second type of derivatives, options derivatives, allows holders to buy or sell the underlying asset before expiration.

5. Yield Farming

Yield farming lets cryptocurrency traders earn passive income on their tokens. Smart contracts are used in the yield farm protocols to lock users' tokens and pay interest on their locked assets. The reward is paid to traders to offset potential risks associated with locking their tokens. Users who lock tokens on yield farm protocols earn interest based on loan interest if their funds are used for DeFi loans and interest based on transaction costs if their funds are used for liquidity.

6. Prediction Markets

These are platforms where users can make predictions on the potential outcomes of certain events. DeFi opens the markets that cover things like sports betting, predictions on stock prices, and politics for participation. The concept of decentralized prediction markets can be made possible through smart contracts.

7. Stablecoins

Stablecoins connect a type of cryptocurrency to a more traditional type of currency like the US dollar to lower price volatility and add more stability.

8. Currency Purchase

DeFi tokens are decentralized applications that run on blockchains with smart contracts. They aim to transform banks, exchanges, and other traditional financial systems through the use of cryptocurrencies, reducing or eliminating the need for third parties. Most of the DeFi tokens run on the Ethereum blockchain. Users can trade, get loans, earn interest, and more.[14]

9. Asset Management

Asset management as a class of service offered by DeFi aims to make investing faster, less expensive, and available to more people. The growth of decentralized asset management has opened up new opportunities for creating sophisticated financial solutions. At the same time, decentralized management of assets also promotes the flexibility of investing in real and virtual assets with ease.[15]

Implications of DEFI to Businesses

It is predicted that the increasing popularity of DeFi will mean the demise of traditional finance. While we're not quite there yet, there is a good reason why DeFi is strongly gaining wide acceptance. The total value locked in DeFi protocols has surpassed $200 billion.

A proof of DeFi giving traditional finance a run for its money is the market value of Ethereum-based DeFi transactions. Accounting for over 68% of collateral in DeFi, Ethereum settled $6 trillion worth of transactions in the twelve months to October 2021.[16]

DeFi may soon be the preferred choice of businesses and institutions to fulfill their credit needs due to its ability to provide financing at more competitive rates compared to traditional finance.

According to an estimate by the Bank of England, traditional finance institutions spend about $20 billion in trade processing annually.[16] This is a result of the high cost of servicing clients from onboarding and trade execution to post-trade activities such as clearing and settlement. Traditional finance can save up to 80% of post-trade settlement expenses by leveraging distributed –ledger technology (DLT)[17]

DeFi is well positioned to disrupt traditional finance with new and innovative financing options. DeFi has fertile ground to rethink the user experience in the capital markets lifecycle. Today,

DeFi has over 17,000 protocols such as Aave, Compound, and Uniswap for lending, borrowing, staking, hedging, swapping, and yield farming.16J]

DeFi has also been successful in dramatically shrinking the cost of manufacturing and distributing various assets. One of the main reasons for these lower costs is again the peer-to-peer lending mechanism in DeFi that eliminates the third-party intermediary. Accessing credit is possible without having to pay a fee to a bank or other institutions to grant that access.

Challenges and Risks Involved in DeFi

As with any new technology, there is always some risk associated with the use of DeFi. Being unregulated, it is a magnet for fraud and money laundering. It also lacks consumer safeguards that are present in traditional finance.

According to Elliptic, a blockchain analytics firm, more than $10 billion was lost to DeFi scams in 2021.[18]

While DeFi has the potential to revolutionize the financial sector, some challenges must be addressed according to experts.

1. It is prone to economies of scale and scope.

Even if there is a free market entry in DeFi like any other financial market is inherently prone to economies of scale and scope. An example is in the exchange markets where traders will always try to execute their orders on the deepest and most liquid exchange. Players will try to dominate and protect their dominant position in the market so the exchange can charge high fees.

2. Collecting taxes is a challenge.

A transaction using digital currencies is taxable, however, reporting them is difficult. An estimate from Barclays suggests that the IRS may be missing out on $50 billion annually in unpaid crypto taxes because of the difficulty in tracing and collecting tax. [19]

3. Governance issues hound the sector.

Governance defines a framework of rules and procedures that regulates the conduct of all participants of a network.[20] DeFi governance is through decentralized autonomous organizations that spread decision-making power among interested stakeholders. If blockholders, investors with large stakes, impose their views, it would be difficult to enforce penalties because of the blockchain's anonymity.

4. Global regulatory coordination is not strong enough.

Having stronger regulatory coordination would help lessen the occurrence of fraud. Experts advocate that validators be required to check that a particular address is owned by a certified identity, then only process transactions that involve certified addresses.

CONCLUSION

Decentralized finance is a very promising ecosystem that eliminates intermediaries by allowing people, merchants, and businesses to conduct financial transactions through emerging technology. This is made possible through peer-to-peer financial networks that use security protocols, connectivity, software, and hardware advancements.

Even as DeFi offers plenty of opportunity and promise, it has issues that need to be addressed like governance. Only when the weaknesses of the system are fully resolved can individuals, business firms, financial institutions, brokers, and other stakeholders truly take advantage of the emerging technology to make DeFi the finance ecosystem of the future.

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