

DeFi and NFT Adoption in Blockchain Financial Analysis Using Transaction Data

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ABSTRACT : *Decentralized Finance (DeFi) has emerged as a transformative force in the financial sector, leveraging blockchain technology to enable trustless, transparent, and efficient financial services. Unlike traditional finance, DeFi operates independently of centralized institutions, relying solely on smart contracts and decentralized networks. This study examines transaction volume, user activity, and protocol engagement within major DeFi ecosystems to uncover adoption trends and behavioral patterns. By analyzing key metrics such as transaction frequency, smart contract interactions, and liquidity flows, we identify factors driving DeFi growth and potential barriers to broader adoption. Our findings provide valuable insights into market dynamics, regulatory considerations, and future developments in decentralized financial systems. The study contributes to ongoing discussions on DeFi scalability, security, and accessibility, offering a data-driven perspective on the evolving landscape of decentralized finance.*

KEYWORDS *Decentralized Finance, DeFi Market Trends, Transaction Volume Analysis, DeFi Adoption.*

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I. INTRODUCTION

There are several reliable sources from which you can obtain information, including industry associations, academic research from scientific journals, open-source databases, social media, and industry reports.

Data from 2018 to 2024 is required because DeFi only recently emerged in the market, with transactions beginning around 2017–2018. During this period, the following data should be collected monthly: number of transactions, total transaction volume, and source. The data has been verified against one or more reliable sources. When discrepancies were found between two sources or a range was specified, the average value was included in the table to provide a comprehensive overview.

II. SIGNIFICANCE OF THE RESEARCH

In the context of business transformation, it is important to observe the trends. The decision is made based on whether it is worth offering a service or product to the market (i.e., whether it meets the demand).

Based on this research, I aim to identify the trends that are relevant today. I have selected financial institutions as the target category.

The question this research aims to answer is: What development trends are currently observed in the market?

Such an analysis has not been conducted so far, and data analysis must be done very carefully, as even a small error can alter the results. The findings of this research will directly assist businesses in making decisions about transforming to WEB3, serve as an additional tool for marketing, and make the system more attractive to users—ultimately helping it reach a wider audience.

III. BLOCKCHAIN MARKET GROWTH WITH KEY STATISTICS AND MARKET MOVEMENTS

The table includes data on MakerDAO, Compound, Uniswap, Aave, Yearn.Finance, and other platforms such as Curve Finance and SushiSwap. Curve Finance and SushiSwap have not yet gained a significant market share and account for less than 10% of transactions.

The information presented has been collected from a variety of influential analytical sources, which include well-regarded research papers, industry reports, and expert opinions. Additionally, the data is derived from publicly available, reliable sources such as government publications, official statistics, and reputable news outlets. These sources have been carefully selected to ensure that the information is credible, accurate, and up-to-date, offering a comprehensive and trustworthy foundation for the analysis.

The diagram also highlights a significant spike during a specific period. This can be attributed to various factors, such as the emergence of new platforms that enable users to invest and conduct transactions. Such technological innovations contribute to the overall growth of the market.

Based on annual data, the annual growth rate can be calculated using the following formula:

Growth rate (%) = [(current year's rate - previous year's rate) / previous year's rate] × 100

Year	Number of transactions (1000)	Annual growth rate of number (%)	Volume of transactions (\$ million)	Annual growth rate of volume (%)
2018	120.00	-	1.50	-
2019	620.00	$[(620 - 120) / 120] \times 100 = 416.67\%$	11.50	$[(11.50 - 1.50) / 1.50] \times 100 = 666.67\%$
2020	1240.00	$[(1240 - 620) / 620] \times 100 = 100.00\%$	29.50	$[(29.50 - 11.50) / 11.50] \times 100 = 156.52\%$
2021	8050.00	$[(8050 - 1240) / 1240] \times 100 = 549.19\%$	145.00	$[(145.00 - 29.50) / 29.50] \times 100 = 391.53\%$
2022	16200.00	$[(16200 - 8050) / 8050] \times 100 = 101.24\%$	200.00	$[(200.00 - 145.00) / 145.00] \times 100 = 37.93\%$
2023	16150.00	$[(16150 - 16200) / 16200] \times 100 = -0.31\%$	260.00	$[(260.00 - 200.00) / 200.00] \times 100 = 30.00\%$

Fig.1. Annual Growth Rate Trends in Blockchain Industry

IV. DATA PROCESSING

Here, we will address the following questions: How did market demand change during the sharp increase in 2019? What were the main factors contributing to this growth?

The growth of the blockchain technology market in 2019 was remarkable, significantly transforming various industries. Below are key examples that illustrate this growth:

- **Bitcoin's Price Surge:** In the second half of 2019, Bitcoin experienced a significant price increase. As the most well-known cryptocurrency, it attracted substantial investment, leading to a surge in blockchain network transactions.
- **The Rise of DeFi Platforms:** The emergence of DeFi platforms in 2019 revolutionized the financial services industry. Built on blockchain technology, these platforms enabled users to access credit services, exchange crypto assets, and conduct financial transactions without relying on centralized institutions. The growing potential of DeFi attracted significant investor interest, further increasing transaction volumes.
- **TradeLens and Supply Chain Innovations:** IBM and Maersk launched the TradeLens platform to enhance global freight transportation using blockchain technology. By 2019, its adoption had grown rapidly, making it one of the most prominent commercial blockchain applications.
- **Facebook's Libra Project (Later Diem):** One of the most discussed blockchain initiatives of 2019 was Facebook's Libra project, later renamed Diem. The project aimed to create a blockchain-based cryptocurrency and unite financial institutions worldwide. Despite regulatory challenges, Libra marked a significant step in blockchain development.
- **Blockchain for Transparency and Supply Chain Management:** Various companies adopted blockchain technology to improve transparency and secure documentation in production and logistics. For example, Walmart and IBM continued to develop the Food Trust platform, which tracks products from supplier to consumer, ensuring traceability and quality assurance.

In summary, three key factors drove blockchain's growth in 2019: increased investor interest, continuous technological advancements, and real-world business applications.

In 2021, cryptocurrencies—especially Bitcoin and Ethereum—reached record-high prices. This surge attracted major investors, both individual and institutional, leading to increased adoption of blockchain technology. As a result, the number and volume of blockchain transactions grew significantly.

- The Rise of NFTs: Non-fungible tokens (NFTs) gained immense popularity in 2021, showcasing a unique application of blockchain technology. The NFT market expanded rapidly, particularly in art, music, video games, and other digital industries. This surge in transactions contributed to the overall growth of the blockchain sector.
- Continued Growth of DeFi Platforms: The adoption of decentralized finance (DeFi) platforms continued to accelerate in 2021. These platforms bridged the gap between traditional banking and blockchain-based financial services, enabling users to access credit, insurance, and asset exchanges without intermediaries. The growing DeFi ecosystem attracted a diverse user base and significantly increased blockchain transaction volumes.
- Technological Advancements: Several key innovations were introduced in 2021 to enhance blockchain scalability, improve network efficiency, and reduce transaction costs. Notably, Ethereum 2.0 brought significant upgrades, making blockchain applications faster and more accessible.
- Corporate Adoption of Blockchain: Many major companies, including Google, Facebook, and Amazon, explored blockchain integration to optimize their business models. This corporate interest further validated the technology and contributed to its mainstream adoption.

V. NFT MARKET EXPANSION AND KEY STATISTICS

The 2021 surge in blockchain activity was driven by three main factors: rising cryptocurrency prices, the rapid expansion of DeFi and NFT platforms, and the increasing commercial and financial use of blockchain technology. The combination of these elements led to a substantial increase in blockchain-based transactions.

The following statistics from one of the market's leading companies serve as a strong example of growth in the NFT sector. One of the most notable marketplaces in terms of trading volume is OpenSea, which saw a 26.22% increase in total trading volume, reaching \$18.6 billion in 2022 compared to the previous year. It is followed by Magic Eden, which experienced a remarkable 268.13% growth, bringing its trading volume to \$1.54 billion. Meanwhile, BloctoBay recorded an outstanding 983.99% surge, reaching \$428 million in trading volume. Another standout performer is Immutable X Market, which increased its NFT trading volume by 185.19%, reaching \$246 million. (Data is based on 2022 reports published by OpenSea, Magic Eden, BloctoBay, and Immutable X Market.)

Let's present this data in a table:

Platform	Trading volume 2021 (\$)	Trading volume 2022 (\$)
OpenSea	14,74 billion	18,6 billion
Magic Eden	418 million	1,54 billion
BloctoBay	39 million	428 million
Immutable X	86 million	246 million

Fig.2. Annual Growth Rate of the NFT Market

Calculate the growth factors using the data in the table. The growth percentage (GR) is calculated using the following formula:

$$GR = \left(\frac{\text{Revenue in 2022} - \text{Revenue in 2021}}{\text{Revenue in 2021}} \right) \times 100$$

Example: OpenSea

$$GR = \left(\frac{18.6 - 14.74}{14.74} \right) \times 100 = 26.22\%$$

Fig.3. Formula for Annual Growth Rate

Let's present the results calculated by the formula in the form of a table:

Platform	Trading volume 2021 (\$)	Trading volume 2022 (\$)	Growth rate (%)
OpenSea	14,74 billion	18,6 billion	26,22
Magic Eden	418 million	1,54 billion	268,13
BloctoBay	39 million	428 million	983,99
Immutable X	86 million	246 million	185,19

Fig.4. Formula for Annual Growth Rate with Percentage

According to statistics, the NFT market continues to grow unabated. In 2022, leading platforms such as OpenSea, Magic Eden, and BloctoBay experienced remarkable growth, indicating the market's ongoing expansion. This trend not only reflects an increase in trading volumes but also a rising interest in NFTs. Clearly, the NFT market is one of the most influential sectors in the modern digital world, with its future likely shaped by both large-scale and emerging investors.

VI. CONCLUSION

From the above, blockchain is one of the fastest-growing and most innovative concepts in today's technological landscape. Its primary goal is to create secure, transparent, and decentralized systems, offering new opportunities across various industries. Blockchain technology is used not only for cryptocurrencies but also in fields such as ultra-secure data storage, automated contracts (smart contracts), trade and financial operations, and distributed network management.

Furthermore, blockchain provides adaptive, high-tech solutions to major global challenges, including pandemics, financial crises, and other systemic issues, fostering a more sustainable, transparent, and reliable infrastructure.

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