

Review Article

Transforming the FinTech Landscape: The Web 3.0 Revolution and its Implications

Kalpesh Barde

Technical Leader, CA, USA.

Corresponding Author : kbarde27@gmail.com

Received: 13 September 2023

Revised: 21 October 2023

Accepted: 07 November 2023

Published: 25 November 2023

Abstract - The rise of Web 3.0, which is based on independent technologies like blockchain and smart contracts, marks a big change in the financial technology field. This research looks at all the different ways that Web 3.0 can be used in FinTech by looking at real-life examples from Ethereum, Betterment, Wealthfront, DeversiFi, Synthetix, Kyber Network, and Curve Finance. By combining ideas from McKinsey's research, the study shows that Web3 lending sites are growing quickly. In 2021 alone, they gave out over \$200 billion in loans. The study shows how Ethereum can be used for smart contracts, how Betterment and Wealthfront's robo-advisory services use AI and machine learning, how DeversiFi's decentralized exchange handles privacy issues, how Synthetix creates on-chain digital assets, how Kyber Network's blockchain-based liquidity protocol is put into use, and how Curve Finance's decentralized platform handles stablecoin transactions. Although there has been success, integrating these technologies is still very hard. The main problems are unclear regulations and technical issues with security, scalability, and interoperability. The final success of Web 3.0 in FinTech will depend on how well these problems are solved, which will help find a good balance between fast technological progress and strong risk management.

Keywords - Web 3.0, FinTech, Blockchain, Smart contracts, Decentralization, Scalability, Security, Ethereum.

1. Introduction

Web 3.0, also called the semantic web, represents the next phase of the internet, distinguished by innovative decentralized technologies like blockchain, smart contracts, and decentralized finance. Despite facing various regulatory and technical obstacles, these breakthroughs can potentially transform the financial industry profoundly.

According to the research conducted by McKinsey, Web3 lending platforms have successfully distributed loans exceeding a total value of \$200 billion in the year 2021.[1] These platforms operate independently, facilitating transactions without the need for traditional banking institutions. This statement demonstrates the emergence of the Web3 paradigm, similar to the earlier development of peer-to-peer lending and crowdfunding platforms.

This investigation primarily aims to explore the many uses of Web 3.0 in financial technology (FinTech) and evaluate its applicability across various sectors. The scarcity of academic studies in this area indicates a research void, emphasizing the need for a more in-depth examination. As such, this study seeks to assess the multiplicity of contexts where Web 3.0 is applied within FinTech — an area that has yet to receive significant scholarly focus. The minimal availability of literature linking Web 3.0 with FinTech has

brought about a notable research gap this study sets out to fill. This study investigates the application of Web 3.0 by companies such as Ethereum, Betterment, Wealthfront, DeversiFi, Synthetix, Kyber Network, and Curve Finance in tackling diverse difficulties. The Web 3.0 FinTech domain challenges include addressing the need to remove intermediaries in transactions, offering personalized financial advice, ensuring secure connections, protecting privacy and control in cryptocurrency trading, expanding investment opportunities, enabling immediate token exchanges, and improving stablecoin trading efficiency through decentralized methods.

2. Literature Review

2.1. Understanding Web 3.0

Web 3.0 is an evolutionary advancement of the existing World Wide Web, introducing advanced technological functionalities to the domain of financial technology (FinTech). The current version of the web platform facilitates improved machine-to-machine communication and encourages effective human-to-human collaboration. The utilization of fundamental elements, such as the semantic web and artificial intelligence, is employed to enable the advancement and implementation of apps that operate on the web. These apps provide enhanced advantages and value, notably within the FinTech domain, through enhancing



efficiency, security, and innovation for various services. Therefore, Web 3.0 can be conceptualized as an enhanced iteration of the existing web environment, with a primary emphasis on providing increased value through the utilization of improved technology capacities. [2][3][4]

In contrast to Web 2.0 (the present web), which primarily enables interaction between users and systems through social media and applications, web 3.0 anticipates requests, enables personalized user experiences, and aids in making intelligent decisions.

It offers a more connected, open, and intelligent web, fostering increased collaboration and decentralization. Common web 3.0 technologies include but are not limited to blockchain, the Internet of Things, and semantic web technologies.[5][6]

Web 3.0, also known as the semantic web, comprises several key features that distinguish it from its predecessors:

- **Semantic Web:** The cornerstone of Web 3.0, the semantic web allows data to be shared and reused across applications, enterprises, and communities. This is achieved by structuring and tagging data so that it can be read and understood by machines, facilitating more efficient discovery, sharing, and combination of information. [7]
- **Artificial Intelligence:** Web 3.0 leverages AI and machine learning algorithms to analyze and understand data, make predictions, and deliver personalized experiences.[8]
- **3D Graphics:** The 3D web, also known as the immersive web, is part of Web 3.0. It includes technologies like virtual and augmented reality, creating more lifelike and interactive user experiences.
- **Ubiquitous Connectivity:** Web 3.0 is about constant connectivity. With the advent of IoT devices, data can be accessed, shared, and interacted with anywhere, anytime. [9]
- **Data Portability:** In Web 3.0, data files can flow freely between different platforms and applications, with interoperability being a key focus.
- **Decentralization:** less centralized control over information and applications is also characteristic of Web 3.0, with schools of thought pointing towards blockchain technology as a method of processing transactions or managing records in a decentralized manner. In summary, Web 3.0 is about creating a more intelligent, connected, and user-responsive Internet.[10]

As we move forward, the continued development and adoption of Web 3.0 signifies a significant shift towards a smarter, more connected, and user-centric internet. The integration of advanced technological features like machine-to-machine interaction and human-to-human cooperation reflects the progression of the web into a more sophisticated and value-driven platform.

2.2. FinTech

FinTech, or financial technology, refers to the integration of technology into the delivery of financial services. It has revolutionized the world of finance by introducing digital technology and transforming traditional businesses into technologically advanced companies [11]. FinTech has significantly impacted various sectors, including banking, e-commerce, insurance, and personal finance management, leading to tremendous evolution in financial services [12]. It encompasses concepts such as blockchain, distributed ledgers, and digital currency, which have the potential to revolutionize financial transactions, payment systems, and monetary policy[13] [14]. FinTech has also given rise to new entrants in the financial markets, such as FinTech and BigTech firms, which leverage advanced technologies and innovative business models, challenging incumbent firms [15]. The rapid digitalization of financial markets has prompted discussions on the need for a regulatory framework that balances the risks and opportunities associated with FinTech.

The historical trajectory of FinTech encompasses significant milestones, one of which is the emergence of the word "FinTech" during the 1980s, serving as an abbreviated form of "financial technology" [16]. Since 2018, a number of events pertaining to Financial Technology (FinTech) have taken place, including the FinNLP workshop series, FinWeb workshop series, and FinNum shared task series. These events have been specifically designed to integrate research on FinTech and artificial intelligence (AI) and expedite progress in the field of FinTech [17]. There exists a contentious debate over the classification of FinTech as either an evolutionary or revolutionary force, with scholars drawing distinctions between these two types of developments [18]. The evolutionary trajectory of FinTech has been examined in terms of regulatory strategies, which have adjusted to emerging advancements by implementing Piloting Projects and Regulatory Sandboxes [19]. In the last ten years, there has been a significant increase in the number of new participants in the financial services sector. These participants, known as FinTech firms, are characterized by their agility and focus on technology. Their disruptive nature has resulted in a transformation of the established hierarchy within the industry, leading to changes in the competitive landscape.[20]

FinTech has significantly transformed the manner in which individuals engage with the financial system. FinTech enterprises provide a diverse array of offerings encompassing online banking, digital wallets, mobile payments, and peer-to-peer lending, which exhibit enhanced efficiency, cost-effectiveness, and convenience compared to conventional financial services [21]. The proliferation of technological developments has led to a notable enhancement in financial inclusion, particularly in rural regions characterized by limited access to conventional banking services [22]. The advent of financial technology (FinTech) has brought about significant

changes to the transaction process. In particular, cash can now be transferred and recorded as balances within specific applications, thereby obviating the necessity for actual currency and traditional bank accounts. Despite this, the addition of financial technology (FinTech) has made the financial system more complicated, leading to the creation of new institutions and links.

Understanding FinTech within the context of Web 3.0 is crucial due to its transformative potential for data management and sharing, requiring adaptation from FinTech companies to stay competitive and provide effective financial services. Blockchain technology, a key element of this transformation, is a decentralized and distributed ledger that provides exceptional security, transparency, and immutability in financial transactions and data management, leading to innovations like cryptocurrencies, smart contracts, and decentralized finance applications. The decentralized nature of Web 3.0, powered by blockchain, brings heightened security and transparency to financial transactions, vital for fostering trust in digital financial systems. Furthermore, Web 3.0's integration of artificial intelligence and machine learning allows FinTech companies to analyze extensive data sets, facilitating personalized financial experiences and improved fraudulent activity detection. [23] [24]

3. Case Studies: Web 3.0's Influence on FinTech Companies

In the ever-evolving realm of financial technology (FinTech), the advent of Web 3.0 emerges as a transformative force, reshaping our approach to decentralized applications and services. Ethereum, a trailblazer in blockchain technology, takes a leading role, underscoring the profound impact of Web 3.0 on the FinTech landscape. Expanding our exploration, this section delves into prominent players, from algorithmic financial planning platforms like Betterment and Wealthfront to groundbreaking entities like DeversiFi and Kyber Network. These platforms strategically employ Web 3.0 principles, including blockchain, smart contracts, and decentralized control, to revolutionize financial services, offering heightened privacy, control, and operational efficiency. Furthermore, the spotlight turns to Synthetix and Curve Finance, where Web 3.0 technologies creatively tackle limitations in traditional markets and optimize stablecoin trading. Navigating this diverse array of FinTech solutions underscores that Web 3.0 is not a mere theoretical concept but an impactful force actively shaping the future of finance.

Ethereum makes use of blockchain technology, which is a key feature of Web 3.0, to support developers in building and executing smart contracts as well as decentralized applications. With its advanced platform, Ethereum is at the forefront of leveraging blockchain technology, allowing developers to develop and implement smart contracts alongside deploying decentralized applications for different purposes.

These digital contracts automatically execute transactions when preset terms and conditions are met, removing the need for a middleman. Web 3.0 technologies enable firms to respond to external changes quickly by integrating data and applications and providing the ability to "infer relationships between data available in different applications or different parts of the same application". [25] As a result, FinTech companies can enhance their efficiency and streamline their operations by incorporating smart contracts into their processes.

Ethereum harnesses blockchain technology to support the development and execution of smart contracts and decentralized applications, positioning itself at the forefront of blockchain innovation.[26]

Algorithmic financial planning platforms, represented by Betterment and Wealthfront, exemplify robo-advisors that provide automated investment services. These entities leverage Artificial Intelligence (AI) and machine learning, integral components of the Web 3.0 framework, to deliver meticulously tailored investment counsel and proficient portfolio management.

Betterment and Wealthfront employ robo-advising technology to deliver algorithm-driven financial planning services, often requiring minimal human oversight. A standard robo-advisor gathers relevant financial information and future objectives from clients via an online survey, utilizing this data to dispense tailored advice and autonomously allocate clients' assets.[27]

These platforms, namely Betterment and Wealthfront, play a crucial role in remedying a fundamental issue within the investment sector: the absence of economical, personalized financial guidance and portfolio management services. Traditional financial advising typically demands substantial financial commitments, and the counsel provided may lack adaptability to individual investors' unique financial circumstances and risk tolerance levels, rendering it largely inaccessible to a significant portion of potential clientele.[28] The pivotal Web 3.0 technologies underpinning these platforms encompass artificial intelligence and machine learning.

AI encapsulates the overarching concept of machines intelligently executing tasks, while machine learning represents the application of AI, enabling machines to glean insights from data. Through machine learning integration, these robo-advisors can swiftly and efficiently analyze extensive datasets, adjusting their strategies in response to market dynamics or changes in clients' financial situations. This seamless amalgamation of AI and machine learning stands as a hallmark of Web 3.0, facilitating a level of data analysis and customization that was previously unattainable with Web 2.0 technologies.[2][29][30]

DeversiFi: DeversiFi is a high-speed decentralized exchange that allows trading from a private wallet. They utilize the principles of Web 3.0, particularly leveraging blockchain for decentralized control and secure transaction[31]

DeversiFi addresses the problem of privacy and control, often compromised in centralized exchanges. In traditional centralized exchanges, traders need to surrender control of their assets to the exchange, risking loss due to hacking or internal compromise. Furthermore, trade execution data is often public, limiting privacy for high-volume traders. [32]

DeversiFi solves this issue by employing principles of Web 3.0. It leverages blockchain technology - specifically Ethereum's blockchain - to allow traders to execute trades directly from a private wallet. Here, the ownership and control of the funds remain with the user, reducing risks associated with third-party control.[33] [34]

Furthermore, DeversiFi uses zk-STARKs, a feature made possible by Web 3.0. This tool allows transactions to happen off the main blockchain network (off-chain) while keeping the same security level as transactions made directly on the blockchain (on-chain). This reduces traffic on the network, allows for more transactions to happen every second, and lowers the cost of transactions. In addition to these benefits, zk-STARKs ensures that all user information remains private because they can check the accuracy of information without exposing the underlying data. [35]In summary, DeversiFi uses Web 3.0 technologies like blockchain and zk-STARKs to increase privacy, ensure control, and improve scalability in cryptocurrency trading.

Synthetix: Synthetix is a blockchain-based platform that enables the creation of on-chain synthetic assets that track the value of real-world assets. It capitalizes on the decentralized nature of Web 3.0 to create a secure and transparent financial platform.[36]

Synthetix addresses a key problem in traditional financial markets: physical asset class limitations. Traditional markets typically limit investments to well-known asset classes, such as specific commodities or securities. However, with Synthetix, users can gain exposure to various synthetic assets, granting access to various previously inaccessible markets.[37]

The Synthetix platform employs smart contracts and decentralized finance, both fundamental aspects of Web 3.0, to create these synthetic assets. Here is how it works: Users lock in collateral in the form of the platform's native cryptocurrency, and in return, they mint synthetic assets known as Synths. These Synths can then mirror the value of any real-world asset—from fiat currencies and cryptocurrencies to commodities and index funds.[38]

Smart contracts, self-executing agreements with terms directly coded, ensure the operation of these Synths. They automatically control the relationship between Synths and SNX tokens, allowing the system to remain trustless and decentralized. This utilization of smart contracts is a key application of Web 3.0 technologies. [34]

Kyber Network: This blockchain-based liquidity protocol allows decentralized token swaps to be implemented into any application. It showcases the use of Web 3.0 concepts like decentralization and blockchain in the FinTech sector. [34]

Kyber Network is addressing a major problem in the cryptocurrency space: the ability to instantly and seamlessly trade tokens directly from one's wallet without the need for a central exchange. Traditional exchanges are often slow, require custody of funds, and may have high fees, a concern for many traders. Kyber Network's decentralized liquidity protocol solves this by allowing any application to integrate decentralized token swaps. This enables users to perform direct token-to-token transactions in a single transaction, bypassing the need for intermediaries.[39]

The Kyber Network utilizes blockchain technology, a key feature of Web 3.0, to ensure that the transactional data is secure, transparent, and immutable. Smart contracts auto-execute the trade without needing an intermediary, thereby offering transparency. Furthermore, the platform employs a robust network of liquidity providers known as "Reserve Entities" to ensure enough trade liquidity. The Kyber network expands the potential of decentralized transactions relevant to an array of services, from financial inclusion services payments to token swaps in gaming ecosystems.[40]

Curve Finance: embodies the principles of Web 3.0 as it employs this latest wave of internet innovations to provide a safe, decentralized platform for stablecoin transactions. By leveraging the power of blockchain technology and smart contracts, Curve Finance ensures decentralized, secure transactions and seamless connectivity—a testament to the application of Web 3.0 technologies in the FinTech scene.

The key challenge that Curve Finance addresses lies in the sphere of stablecoin trading. Stablecoins—cryptocurrencies designed to maintain a stable value—are often tethered to stable assets, including gold or traditional fiat currencies. However, trading stablecoins across conventional exchange platforms can be both inefficient and expensive due to the inherent design attributes of these platforms not optimized for stablecoin trading. Curve Finance, a decentralized exchange expressly optimized for stablecoin swaps, assures users of reduced slippage and lower transaction fees.

By utilizing an automated market maker algorithm specifically tailored for stablecoins, Curve Finance ensures an

efficient trading experience on its platform. Blockchain guarantees a verifiable, secure, and unassailable record of all transactions acted out on the platform. At the same time, smart contracts allow these trades to occur autonomously—rendering a centralized authority or intermediary redundant. Consequently, Curve Finance demonstrates how Web 3.0 technologies—offering decentralization, secure transactions, and constant connectivity—can be harnessed effectively to devise innovative solutions in the FinTech landscape. [41]

4. Limitations in Integrating Web 3.0 in Fintech

Incorporating Web 3.0 technology inside the financial industry encounters notable obstacles stemming from the lack of complete and unambiguous regulatory frameworks. Introducing innovative technologies, such as blockchain, smart contracts, and decentralized finance, presents a range of complex legal, regulatory, and risk management challenges. The absence of well-defined regulations in numerous domains pertaining to the utilization and administration of these technologies gives rise to legal uncertainty and presents significant hazards for FinTech enterprises. Moreover, the implementation of regulations is hindered by the decentralized nature of these technologies. Regulatory bodies worldwide are engaged in the pursuit of striking a delicate equilibrium between the supervision of activities associated with Web 3.0 and the facilitation of technological advancement. [43] [44]

Existing FinTech infrastructure can face technical challenges when implementing Web 3.0 technologies. These may include issues related to scalability, interoperability, data privacy and security, and overall system complexity.

Specifically, blockchain-based systems, a crucial part of Web 3.0, often struggle with scalability and cannot handle a high number of transactions per second, limiting their practical use. Interoperability is another challenge as Web 3.0 demands seamless interaction between different platforms, which current infrastructure may not support. Moreover, maintaining user privacy and protecting against potential security threats in such an open and connected environment poses significant challenges. Lastly, the complexity of Web 3.0 systems could lead to higher costs and longer implementation times. [45]

5. Conclusion

In summary, the emergence of Web 3.0 technologies holds the capacity to significantly transform the financial industry by providing heightened privacy, increased user autonomy, and enhanced scalability. The possibility of effectively harnessing these technologies is demonstrated by innovative platforms such as Ethereum, Betterment, Wealthfront, Synthetix, Kyber Network, and Curve Finance. Nevertheless, certain obstacles must be addressed promptly, such as the lack of clarity in legislative frameworks and the presence of technological difficulties like restrictions in infrastructure. These hurdles present substantial issues that require immediate attention and solutions. Ensuring an appropriate balance between the rate of technological advancement and effective risk mitigation is of utmost importance in order to responsibly leverage the potential of Web 3.0 within the financial technology sector. Moving ahead, the capacity to overcome these challenges will significantly influence the future efficacy and influence of Web 3.0 in this particular domain.

References

- [1] Anutosh Banerjee et al., “Web3 Beyond the Hype,” *McKinsey and Company*, pp. 1-11, 2022. [[Google Scholar](#)] [[Publisher Link](#)]
- [2] A. Cook et al., “What Business Leaders Should Know About Web 3.0?,” *Deloitte*, 2020. [[Google Scholar](#)] [[Publisher Link](#)]
- [3] Impact of Web 3.0 on the Fintech Industry, Aeologic, 2022. [Online]. Available: <https://www.aeologic.com/blog/impact-of-web-3-0-on-the-fintech-industry/>
- [4] What is Web3?, AWS. [Online]. Available: <https://aws.amazon.com/what-is/web3/>
- [5] Gizem Yildiz, and Mutlu Tahsin Üstündağ, “Exploring the Views of the Trainees on the Use of Web 2.0 and Web 3.0 Tools in Language Teaching,” *International Journal of Educational Research Review*, vol. 8, no. 3, pp. 303-321, 2023. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [6] Semantic Web, Wikipedia, [Online]. Available: https://en.wikipedia.org/wiki/Semantic_Web
- [7] Tim Berners-Lee, James Hendler and Ora Lassila, “A New Form of Web Content that is Meaningful to Computers Will Unleash a Revolution of New Possibilities,” *Scientific American*, vol. 284, no. 5, pp. 34-43, 2001. [[Google Scholar](#)] [[Publisher Link](#)]
- [8] Stuart Russell, and Peter Norvig, *Artificial Intelligence: A Modern Approach*, 4th US ed., University of California, pp. 1-18, 2021. [[Google Scholar](#)] [[Publisher Link](#)]
- [9] Jayavardhana Gubbi et al., “Internet of Things (IoT): A Vision, Architectural Elements, and Future Directions,” *Future Generation Computer Systems*, vol. 29, no. 7, pp. 1645-1660, 2013. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [10] Nicole Radziwill, “Blockchain Revolution: How the Technology behind Bitcoin is Changing Money, Business, and the World,” *The Quality Management Journal*, vol. 25, no. 1, pp. 64-65, 2018. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [11] Gurdip Kaur, Ziba Habibi Lashkari, and Arash Habibi Lashkari, “Introduction to FinTech and Importance Objects,” *Understanding Cybersecurity Management in FinTech*, pp. 1-15, 2021. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [12] Zhong Xu, and Chuanwei Zou, *The Future of Inclusive Finance*, 1st ed., Taylor and Francis, pp. 1-5, 2022. [[Publisher Link](#)]

- [13] Mayuri M. Gawade et al., “FinTech,” *International Journal for Research in Applied Science and Engineering Technology*, vol. 11, no. 3, pp. 5734-5742, 2023. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [14] Jeremy Peat, Owen Kelly, and Daniel Broby, “Fintech: Hype or Reality?,” *University of Strathclyde*, pp. 1-15, 2017. [[Google Scholar](#)] [[Publisher Link](#)]
- [15] Alessandra Tanda, and Cristiana-Maria Schena, “Introducing the FinTech Revolution,” *FinTech, BigTech and Banks*, pp. 1-5, 2019. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [16] Sahoko Kaji, “An Overview of Fintech,” *The Economics of Fintech*, pp. 1-16, 2021. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [17] Chung-Chi Chen et al., “An Overview of Financial Technology Innovation,” *Companion Proceedings of the Web Conference 2022*, pp. 572-575, 2022. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [18] Imad A. Moosa, *Chapter 2: The Evolution and Revolution of Fintech*, Edward Elgar Publishing, pp. 1-256, 2022. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [19] Kukuh Setiawan, and Nadia Maulisa, “The Evolution of Fintech: A Regulatory Approach Perspective,” *Advances in Economics, Business and Management Research*, vol. 130, pp. 218-225, 2020. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [20] Henri Arslanian, and Fabrice Fischer, “The Rise of Fintech,” *The Future of Finance*, pp. 25-56, 2019. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [21] Rajesh Meena, “The Impact of Financial Technology on Financial Services: A Comprehensive Analysis,” *Research Review International Journal of Multidisciplinary*, vol. 8, no. 3, pp. 185-192, 2023. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [22] Pamela Soledad Moncayo Mejia, and Pilar Madrazo Lemarroy, “Financial Technologies in the Emerging Markets,” *Data Analytics Applications in Emerging Markets*, pp. 1-22, 2022. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [23] Satoshi Nakamoto, “Bitcoin: A Peer-to-Peer Electronic Cash System,” *Bitcoin*, pp. 1-9, 2008. [[Google Scholar](#)] [[Publisher Link](#)]
- [24] Don Tapscott, and Alex Tapscott, *Blockchain Revolution: How the Technology behind Bitcoin is Changing Money, Business, and the World*, Portfolio, pp. 1-368, 2016. [[Google Scholar](#)] [[Publisher Link](#)]
- [25] Nick Szabo, “Smart Contracts: Building Blocks for Digital Markets,” *EXTROPY: The Journal of Transhumanist Thought*, vol. 8, no. 2, 1996. [[Google Scholar](#)] [[Publisher Link](#)]
- [26] Vitalik Buterin, Ethereum Whitepaper, Ethereum, 2023. [Online]. Available: <https://ethereum.org/en/whitepaper/>
- [27] Robo-Advisors, CFA Institute Research and Policy Center, 2020. [Online]. Available: <https://rpc.cfainstitute.org/en/policy/positions/automated-advisors>
- [28] Bernice Napach, “What is a Robo Advisor, and Do I Need One?,” *WSJ*, 2022. [Online]. Available: <https://www.wsj.com/buyside/personal-finance/what-is-a-robo-advisor-01658944260>
- [29] Lauren Gibbons Paul, 10 Core Features of Web 3.0 Technology, TechTarget, 2023. [Online]. Available: <https://www.techtarget.com/searchcio/tip/10-core-features-of-Web-30-technology>
- [30] Exploring Blockchain as the Foundation for Next Gen Apps on Web 3.0, IBM, 2023. [Online]. Available: <https://www.ibm.com/blog/exploring-blockchain-as-the-foundation-for-next-gen-apps-on-web-3-0/>
- [31] Rahul Nambiapurath, DeFi Deep Dive - DeversiFi: A DEX with All the CEX Upsides, BeInCrypto, 2021. [Online] <https://beincrypto.com/defi-deep-dive-deversifi-a-dex-with-all-the-cex-upsidess/>
- [32] Introducing DeversiFi, Rhino.fi, 2023. [Online]. Available: <https://rhino.fi/blog/introducing-deversifi/>
- [33] Steven Goldfeder et al., “Securing Bitcoin Wallets via a New DSA/ECDSA Threshold Signature Scheme,” *Stevengoldfeder.Com*, 2323. [[Google Scholar](#)] [[Publisher Link](#)]
- [34] Zhou Dongyi, Ethereum: A Secure Decentralized Generalized Transaction Ledger, Clouddatalab.Github, 2018. [Online]. Available: <https://clouddatalab.github.io/paper/2018/09/09/Ethereum-A-secure-decentralized-generalized-transaction-ledger/>
- [35] Eli Ben-Sasson et al., “Scalable, Transparent, and Post-Quantum Secure Computational Integrity,” *Cryptology ePrint Archive*, pp. 1-83, 2018. [[Google Scholar](#)] [[Publisher Link](#)]
- [36] Kain Warwick, What is Synthetix and How Does it Work?, Gemini.Com, 2023. [Online]. Available: <https://www.gemini.com/cryptopedia/synthetix>
- [37] Synthetix: The Derivatives Liquidity Protocol - Thrive.fi, 2023 [Online]. Available: <https://thrive.fi/blogs/defi/synthetix>
- [38] Check Out the New Synthetix Litepaper, Synthetix, 2019. [Online]. Available: <https://blog.synthetix.io/check-out-the-new-synthetix-litepaper/>
- [39] Kyber Network Review, Smart Billions, [Online]. Available: <https://smartbillions.com/exchanges/kyber-network-review/>
- [40] Partha Pratim Ray, “Web3: A Comprehensive Review on Background, Technologies, Applications, Zero-Trust Architectures, Challenges and Future Directions,” *Internet of Things and Cyber-Physical Systems*, vol. 3, pp. 213-248, 2023. [[CrossRef](#)] [[Google Scholar](#)] [[Publisher Link](#)]
- [41] Bessie Liu, Curve Deploys Stablecoin Smart Contract on Ethereum, Blockworks, 2023. [Online]. Available: <https://blockworks.co/news/curve-deploys-stablecoin-smart-contract>
- [42] Curve Fi, Curve Readthedocs, 2022. [Online]. Available: https://curve.readthedocs.io/_/downloads/en/latest/pdf/

- [43] Dirk Zetsche, Ross P. Buckley, and Douglas W. Arner, "The Distributed Liability of Distributed Ledgers: Legal Risks of Blockchain," *HeinOnline*, pp. 1-49, 2018. [[Google Scholar](#)] [[Publisher Link](#)]
- [44] Douglas W. Arner, János Barberis, and Ross P. Buckley, "The Evolution of Fintech: A New Post-Crisis Paradigm," *Georgetown Journal of International Law*, vol. 47, pp. 1-45, 2016. [[Google Scholar](#)] [[Publisher Link](#)]
- [45] William Mougayar, *The Business Blockchain Promise, Practice, and Application of the Next Internet Technology*, Wiley, pp. 1-208, 2016. [[Google Scholar](#)] [[Publisher Link](#)]