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Analyzing Opportunities and Threats of Decentralized Finance (DeFi)

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Abstract

With the expansion of digitalization into the financial sector, emerging technology has also demonstrated new applications within the traditional financial system. This rapid change in the financial system was not limited only to the applications in the central financial system and the emergence of financial assets, but then steps were taken to the decentralized financial system. The aim of this study is to examine the Decentralized Finance (DeFi) system, which has emerged as an independent alternative to the traditional finance system, and to reveal the opportunities and threats in this field. In this context, the focus was first on the traditional central financial system, which consists mostly of banking and financial institutions. Then, digital assets, cryptocurrencies, FinTech and RegTech which are the antecedents of decentralized finance system were explained. This study examines DeFi, an independent and pioneering technology, highlighting its distinctive features and explaining the opportunities and threats it presents. While the important opportunities emerging with DeFi are accessibility, globality, cost effectiveness and transparency, the main threats are listed as exclusion of the central financial system, volatility, legal problems and security risk.

Merkezi Olmayan Finans'ın (DeFi) Fırsat ve Tehditlerinin Analizi

Öz

Dijitalleşmenin finans sektörüne yayılmasıyla birlikte gelişen teknoloji, geleneksel finansal sistem içinde de yeni uygulamalar ortaya çıkarmıştır. Finansal sistemdeki bu hızlı değişim, yalnızca merkezi finansal sistemdeki uygulamalar ve finansal varlıkların ortaya çıkmasıyla sınırlı kalmamış, daha sonra merkezi olmayan finansal sisteme yönelik adımlar atılmıştır. Bu çalışmanın amacı, geleneksel finans sistemine bağımsız bir alternatif olarak ortaya çıkan Merkezi Olmayan Finans (DeFi) sistemini incelemek, bu alandaki fırsat ve tehditleri ortaya koymaktır. Bu kapsamda ilk olarak çoğunluğu bankacılık ve finans kuruluşlarından oluşan geleneksel merkezi finansal sistem üzerine odaklanılmıştır. Daha sonra merkezi olmayan finans sisteminin öncülleri olan dijital varlıklar, kripto paralar, FinTech ve RegTech anlatılmıştır. Bu çalışma, bağımsız ve öncü bir teknoloji olan DeFi'yi inceleyerek, ayırt edici özelliklerini vurgulamakta ve sunduğu fırsat ve tehditleri açıklamaktadır. DeFi ile ortaya çıkan önemli fırsatlar erişilebilirlik, küresellik, maliyet etkinliği ve şeffaflık iken, başlıca tehditler merkezi finansal sistemin dışlanması, oynaklık, hukuki sorunlar ve güvenlik riski olarak sıralanmaktadır.

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1. Introduction

Traditional finance is a system governed by a central authority, operating under strict regulations and involving intermediaries in financial transactions. The central financial system has a more cumbersome structure compared to the decentralized financial system. It has disadvantages such as banking transaction fees, data collection, accessibility (David, 2022) and lack of transparency. The difficulties inherent in the traditional financial system and various problems encountered in financial transactions can be alleviated with a decentralized financial system. Although the decentralized financial system cannot be expected to be a solution to all problems, it is advantageous to reduce and eliminate some of the existing problems.

The rapid increase in technological developments and their adaptation to traditional financial systems have increased the interest in technology-intensive applications and subsequently revealed the antecedents of decentralized systems such as digital assets, cryptocurrency, FinTech and RegTech. The emergence of cryptocurrencies and digital assets, which attracted great attention after the launch of Bitcoin (Nakamato, 2008), is a gateway to the development of DeFi. With the growth of cryptocurrencies, DeFi, which is the system where mostly decentralized applications are registered on the Ethereum blockchain network, has started a new era of innovation in the financial sector by providing new volatile crypto-asset products (OECD, 2022).

The development journey in the banking system, which started with the introduction of computers and the internet, has initiated a major change in the banking system by incorporating many technological innovations such as artificial intelligence, machine learning, big data analytics, internet of things and cloud computing (Kautikwar, 2020). This development has led to rapid progress in areas involving high digital technology such as FinTech and Blockchain. The integration of these systems with the standard financial system increases the speed of financial transactions, facilitates their execution and increases their security.

This study focuses on the opportunities offered by the decentralized financial system and the possible challenges and threats that may arise. The literature review section of this study begins by providing an explanation of the traditional finance system. It then proceeds to discuss the ideas of digital assets, cryptocurrencies, FinTech, and RegTech, which serve as the antecedents of the decentralized finance system. Then, DeFi, which was pioneered by these concepts, was emphasized. In the next section of the study, the opportunities that DeFi brings, the challenges and threats it poses are explained. The final section of the study presents the findings of the research, states the limitations encountered, and explains recommendations for future investigations.

2. Literature Review

The concept of DeFi, which symbolizes the decentralized financial system, is still a new concept. The number and scope of academic studies on this subject, which have recently begun to attract the attention of investors and academicians, continue to develop over time, and although there is currently limited literature, it is expected that the research will increase over time. In this part of the study, the traditional finance system, the antecedents of the decentralized finance system and the decentralized finance system are examined.

2.1 Traditional Centralized Finance Systems

In the traditional centralized financial system, trade between borrowers and lenders has been carried out through the central bank, banks and various financial institutions under the control of a central authority for many years. Centralized finance has advantages over decentralized finance, such as better payment flexibility, access to customer service, and better returns (CoinDCX, 2022). Although this traditional system is one that users find familiar and reliable, there are many traditional limitations on financial transactions. The above-mentioned financial structures, which have been used for financial transactions for decades, had some problems such as 1) Lack of interoperability, 2) Limited access, 3) Inefficiency, 4) Centralized management, and 5) Transparency (Harvey et al., 2021).

Today, there are many people lacking access to banking services or a bank account. According to The World Bank Global Findex Database 2021 is created by Demirgüç-Kunt et al (2022) bank account ownership has increased to 76 percent of the world's population, but only 71 percent of those living in developing countries have an account. In the traditional centralized financial system, all institutions in the financial system act under the control of a central authority, requiring investors to comply with certain rules. The financial system must become safer and more transparent for investors. For example, the transparency problem was caused by banks having liquidity problems during the financial crisis and investors having difficulties in choosing a bank because they did not know which bank had payment problems during this period (Frykström, 2022). In addition, centralized financial system users have to deal with obstacles such as high transaction fees and the inability to provide services in real time, which increase expenses and reduce efficiency.

2.2 Antecedents of Decentralized Finance

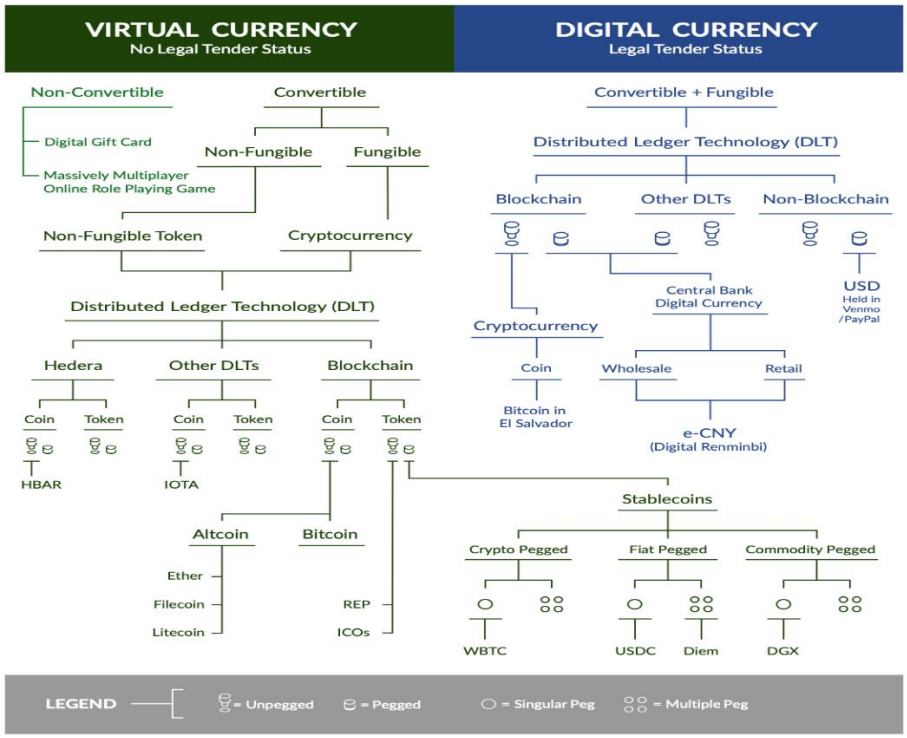
2.2.1 Digital Assets

Internal Revenue Service (2023) defines digital asset as “any digital representation of value which is recorded on a cryptographically secured distributed ledger or any similar technology.” Bitcoin and other cryptocurrencies are not the only digital assets. With the advent and subsequent adoption of blockchain technology, the popularity of digital assets began to grow, and these digitally traded assets

expanded to include investable asset types such as cryptocurrencies, NFTs, asset-backed tokens and tokenized real estate (Nasdaq/All About Digital Assets, 2023).

Digital asset taxonomy refers to the classification of digital assets by their functionality or use cases (Wilshire Digital Asset Research, 2021). Understanding digital assets with Taxonomy simplifies research and analysis. The classification of digital assets is based on various criteria. According to this definition the taxonomy criteria made by Goldman & Kumar (2021) can be seen in Figure 1:

Figure 1: Digital Assets



Source: Goldman, K. & Kumar A. (2021). A Taxonomy of Digital Assets, Milken Institute, https://milkeninstitute.org/sites/default/files/2021-10/A%20Taxonomy%20of%20Digital%20Assets.pdf

2.2.2 Cryptocurrencies

Introduced in the white paper published by Satoshi Nakamoto (2008), Bitcoin is created as the first type of cryptocurrency on the blockchain. Digital currencies are based on blockchain, a decentralized and distributed network that saves data with digital signatures and it makes the system more secure with its features such as distributedness, immutability, transparency and auditability (Monrat et al., 2019). This technology does not rely on a central authority to execute data transactions or

on intermediary third parties to verify and authenticate data transactions (Rajasekaran et al., 2022).

Cryptocurrency traders simply send money through their digital wallet addresses without revealing their real names and physical addresses, and their transactions are recorded as number strings (Siripurapu & Berman, 2023). The basis of this new system is to remove the trust mechanism between people, instead of trusting central banks or government officials, to ensure that transactions are made on blockchain without a central management institution (Watorek et al., 2021).

According to Forbes (2023) data on Dec-07-2023, the total cryptocurrency market capitalization is $1.67T. This rapid expansion in the cryptocurrency market has become one of the most important antecedents to the change of the financial industry from a centralized to a decentralized structure. As indicated by Popescu (2020a), with the innovations brought by Blockchain Technology, the services provided by traditional finance can be developed, as well as decentralized business models can be supported by empowering entrepreneurs and innovators with the right tools.

2.2.3 Finance Technologies (FinTech)

Despite its lengthy history, FinTech has seen a remarkable evolution during the past several years. In the study of Arner et al (2015), FinTech development periods are defined as the analog period called FinTech 1.0 from 1866 to 1967, the FinTech 2.0 period, which is the transition from the analog industry to the digital industry from 1967, and from 2008 after the digitalization process that continues until 1987, then listed as FinTech 3.0.

FinTech, DeFi, Blockchain and RegTech are concepts closely related to the digitalizing financial system and include transitions and requirements with each other. According to Chirag (2022) DeFi is all about fusing FinTech and Blockchain, whereas Blockchain is known for its decentralized, distributed, immutable, and transparent digital ledger technology that offers a novel level of security and freedom. Technologic framework of DeFi covers artificial intelligence, blockchain, cloud computing and data (Zetzsche et.al., 2020).

FinTech businesses abandon the traditional banking industry's rigid business models, combine technology-intensive systems with speed and adaptability, and provide customer-centric services with forward-looking strategies (Nicoletti, 2017). Bu et al. (2022) states in their study that with the rapid development of FinTech in China, it may be difficult to cope with the risks posed by FinTech within the traditional regulatory framework. Despite all this, Fintech is expected to continue to lead the financial world with its rapid development.

2.2.4 Regulation Technologies (RegTech)

The main reason why RegTech is needed is that although the DeFi system provides many advantages compared to centralized exchanges, it has some threatening

disadvantages. Threats associated with De-Fi include fraudulent investors conducting business in unethical ways, technically flawed smart contracts, and phishing attacks and these threats, which De-Fi users come into contact with when interacting with a De-Fi service, can result in losses both financially and in terms of reputation (Kaur et al., 2023).

Teichmann et al. (2023), in their study describing the benefits of RegTech solutions and the challenges of adopting these technologies, stated that the 2008 economic crisis showed the necessity of many rules to prevent the repetition of the past, and as a direct result of this, RegTech emerged to provide a change in the way compliance is managed.

Financial markets, which are the lifeblood of the economy, are subject to stringent controls as they deal with people's and businesses' savings (Loesch, 2018). An example of this is the Bank Secrecy Act of 1970, which requires financial institutions to cooperate with the US government to reduce financial crimes, verify their customers' information, and monitor financial activities and report anything suspicious to the relevant authority (GetID, 2022). Kurum (2020) stated in his study that artificial intelligence will become the most effective technology for financial institutions in the fight against financial crimes. Kirimhan's (2023) study presents security enhancing suggestions by explaining the provision of cyber security with anti-money laundering (AML) regulations among productive consumers in decentralized finance (DeFi).

The innovativeness of DeFi's rapid development has created audits and regulatory and compliance issues. Although RegTech aims to eliminate these problems, the threats of existing security vulnerabilities continue.

2.3 Decentralized Finance (DeFi)

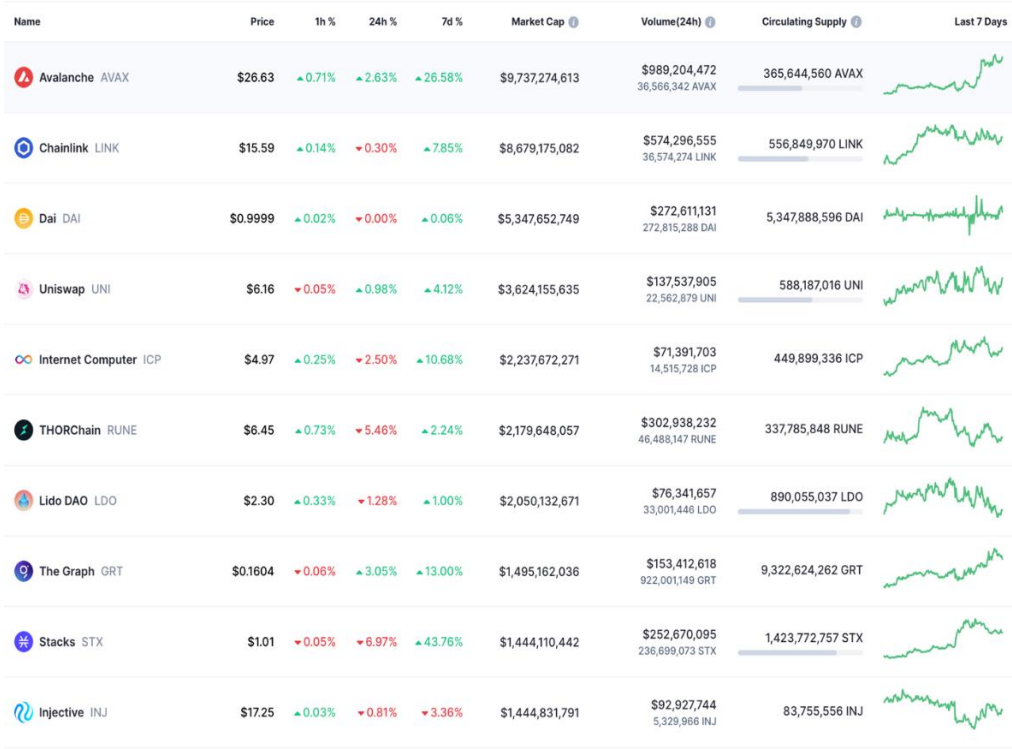
Decentralized finance can be defined as “an emerging financial technology based on secure distributed ledgers similar to those used by cryptocurrencies” (Sharma, 2022). In one other study, Popescu (2020b) defines decentralized finance as “DeFi as stands for Decentralized Finance, which is also known as Distributed Finance or Open Finance and is a financial business environment without any central endorsement body.” According to Ethereum.org (2023) DeFi is a fast and transparent system where investors can hold their money, control how the money is managed, and the markets work without a break. It has a facilitating effect on transactions within the financial system. The DeFi system provides the user with opportunities such as deposit-withdrawal, insurance, lending and establishing a legal structure (joint stock company etc.) established in real life (Sert, 2022).

Figure 2: DeFi Pulse Index USD (DPI-USD)

Source: Yahoo Finance (n.d). https://finance.yahoo.com/chart, (Accessed at: 12.07.2023)

It is the important DeFi Pulse index, which is one of the important indices followed by DeFi users. Indexcoop (n.d) defines "The DeFi Pulse Index (DPI)" as "A capitalization-weighted index that tracks the performance of decentralized financial assets across the market." It is an index created by the combination of important, highly liquid and reliable tokens in the DeFi sector, and is an index similar to the stock market index that investors follow to understand the general situation. DeFi index have a high market value. The current live price of the DeFi Pulse Index (at date:12/07/23) is $91,06 USD, and the trading volume over the past 24 hours has been $256,993 USD (Coinmarketcap, 2023). Figure 2 indicates a year DeFi Pulse Index USD (DPI-USD).

Figure 3: Top 10 DeFi Tokens by Market Capitalization



Name	Price	1h %	24h %	7d %	Market Cap	Volume(24h)	Circulating Supply	Last 7 Days
Avalanche AVAX	$26.63	▲0.71%	▲2.63%	▲26.58%	$9,737,274,613	$989,204,472 36,566,342 AVAX	365,644,560 AVAX	
Chainlink LINK	$15.59	▲0.14%	▼0.30%	▲7.85%	$8,679,175,082	$574,296,555 36,574,274 LINK	556,849,970 LINK	
Dai DAI	$0.9999	▲0.02%	▼0.00%	▲0.06%	$5,347,652,749	$272,611,131 272,815,288 DAI	5,347,888,596 DAI	
Uniswap UNI	$6.16	▼0.05%	▲0.98%	▲4.12%	$3,624,155,635	$137,537,905 22,562,879 UNI	588,187,016 UNI	
Internet Computer ICP	$4.97	▲0.25%	▼2.50%	▲10.68%	$2,237,672,271	$71,391,703 14,515,728 ICP	449,899,336 ICP	
THORChain RUNE	$6.45	▲0.73%	▼5.46%	▲2.24%	$2,179,648,057	$302,938,232 46,488,147 RUNE	337,785,848 RUNE	
Lido DAO LDO	$2.30	▲0.33%	▼1.28%	▲1.00%	$2,050,132,671	$76,341,657 33,001,446 LDO	890,055,037 LDO	
The Graph GRT	$0.1604	▼0.06%	▲3.05%	▲13.00%	$1,495,162,036	$153,412,618 922,001,149 GRT	9,322,624,262 GRT	
Stacks STX	$1.01	▼0.05%	▼6.97%	▲43.76%	$1,444,110,442	$252,670,095 236,699,073 STX	1,423,772,757 STX	
Injective INJ	$17.25	▲0.03%	▼0.81%	▼3.36%	$1,444,831,791	$92,927,744 5,329,966 INJ	83,755,556 INJ	

Source: CoinMarketCap (2023), Top DeFi Tokens by Market Capitalization https://coinmarketcap.com/view/defi/, (Accessed at: 12.07.2023)

In the decentralized finance system, financial services are automated through smart contracts on a blockchain. In this system, all contract and transaction details in the blockchain are recorded. Despite these features, it is seen that the use of DeFi among investors has not yet become widespread. For DeFi to grow in popularity and use, it is necessary to improve blockchain scalability and large-scale tokenization of traditional securities, and public authorities need to interface with DeFi's governance structures to protect investors and prevent illegal activity (Aramonte et al., 2021). Decentralized finance permits peer-to-peer transactions without the need for a central exchange, whereas centralized finance is akin to traditional forms of centralized finance in which banks and exchanges control currency and transaction flows (Kerner, 2023). De-Fi is a much preferable mechanism to centralized finance due to the reduction of bank fees and commissions, the ability to secure money in a secure digital wallet rather than keeping it, easy access by users without waiting for approval, and fast money transfer of funds in a shorter time (Bonaparte, 2022). In centralized finance, the

investor has to comply with the rules set by the stock market and accept the fee (Takyar, 2020). Qin et al. (2021) listed the most common distinguishing features of centralized and decentralized finance as who controls the assets, how transparent and responsible it is, and what privacy protections are available to the end user. Unlike a centralized financial system, De-Fi does not need a court, arbitrators, or intermediaries to resolve disputes that may arise because the code dictates resolution of any potential conflicts that may arise and ensures that users' funds are always properly controlled (Metwaly & Metwaly, 2021).

Figure 3 shows top ten DeFi tokens by market capitalization. As of December 2023, the DeFi crypto market cap is $62.53B and the top ten DeFi tokens according to market cap are shown (CoinMarketCap, 2023).

In addition, crypto trading can take place via CEX and DEX financial systems. In decentralized crypto exchanges, digital assets are traded directly between buyers and sellers, and their transactions are made using smart contracts and decentralized applications (Scharfman, 2023). CEX differs from DEX in that orders are processed on-chain (through smart contracts) and users never sacrifice control over their funds (Binance Academy, 2020). In CEX, the investors keep their investment in an exchange-linked wallet, while in DEX they use their private key and connects their existing wallet to the DEX (Moreland, 2022).

DeFi services generally take place on several blockchain platforms. Ethereum is one of them. Many DeFi projects have been built on the Ethereum platform, taking advantage of its easy programmability feature (Carter &Jang, 2021). Besides Ethereum, other prominent platforms are platforms such as Binance Smart Chain, Solana, Avalanche and Cardano.

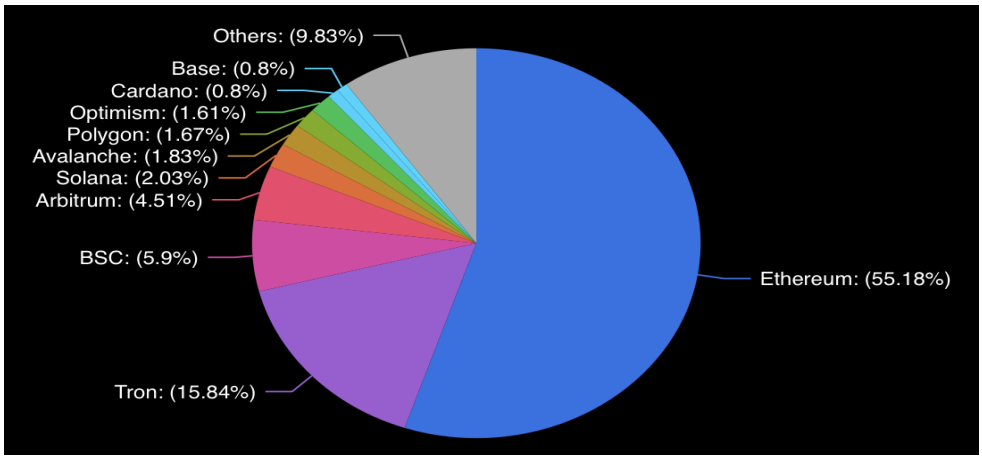
Additionally, DeFi is software based on some protocols. There are institutions that analyze these protocols and measure their reliability. These are independent rating agencies that create a safety score for investors. Figure 4 shows the scores of DeFiSafety (2023), an independent rating agency that evaluates Decentralized Finance products, in different projects. The percentage score represents how closely projects follow best practices regarding the quality of their processes. Figure 4 lists the 3 highest-rated reviews and the 3 lowest-rated reviews, which are the score rankings by DeFi Safety, by December 2023.

Figure 4: Highest Scoring Reviews

Score	Project	Version	Chain	Category
100%	Balancer Finance V2	0.7		Liquidity Provider
98%	Morpho	0.8		Lending / Borrowing
97%	Pods Finance	0.8		Yield Farming
2%	Atrix	0.8		AMM
2%	YFFI Finance	0.5		AMM
0%	Spaghetti PASTA	0.7		

Source: DeFiSafety. (2023). Process Quality Reviews, https://www.defisafety.com/ (Accessed at: 12. 07. 2023)

Figure 5: Total Value Locked All Chains



Source: DeFiLlama. (2023). Chains, https://defillama.com/chains (Accessed at: 12. 17. 2023)

To compare DeFi protocols that allow users to move their assets from one blockchain to another, the Total Value Locked value of the protocols can be used (Reiff, 2023). Total Value Locked (TVL), one of the key analytical performance indicators of DeFi protocols, identifies the DeFi market and shows how much money is locked in a particular DeFi protocol; in other words, it is the total value of DeFi tokens staked on the blockchain as collateral (Metelski &Sobieraj, 2022). Total

Value Locked All Chains (DeFiLlama, 2023) is presented in Figure 5. Figure 5 shows the Ethereum chain with the highest TVL value 55.18%, while the chains with the lowest TVL are Base and Cardano 0.8% (DeFillama, 2023).

3. Exploring Opportunities and Threats of Decentralized Finance

DeFi brings with it many opportunities and threats. The emergence of the DeFi system, whose applications are mostly on Ethereum, and the rapid acceleration of its usage, indicate that the decentralized finance system will take a significant place in the future. DeFi provides more convenience to its users than the central financial system. It is thought that with the development of DeFi, it will create an opportunity to eliminate the lack of access for those who cannot access the traditional financial system, and thus enable wider masses to benefit from financial opportunities. In this way, investors will have easier access to the financing system without the need for physical institutions or a central authority but there are also undesirable risks and threats brought by the system. In this part of the study, the opportunities provided by the decentralized finance system and the threats it faces compared to the traditional finance system are explained.

3.1 Opportunities

The first of the opportunities that DeFi brings is that it expands the scope of financial services. While the classical financial system and its associated banking system exclude 1.7 billion people worldwide (Abdulhakeem & Hu, 2021), as mentioned above, DeFi is more comprehensive system. One of the main goals of DeFi is to include people who can and cannot be reached by the traditional financial system, regardless of their socio-economic status and geographical location. This means that a large mass of people who have not yet met the banking system are included in the financial system. As clutter-free and user-friendly interfaces emerge, more people will become DeFi users, starting from younger generations prone to technology.

Although DeFi is still a very new concept, one of its most important features is that it emerged as born-global. It is not under the control of any country or authority. With this feature, DeFi brings a completely global financial system, not a local one. Although traditional financial systems provide services globally, they have service areas whose boundaries are drawn by interstate agreements. DeFi eliminates these restrictions, providing equal access and participation to people from all over the world.

The traditional financial system has processes that involve many institutions and organizations, their employees and facilities, and are taxed by states. The expenses of each of these processes and the profits allocated by institutions increase the costs of financial services. A decentralized financial system on the blockchain will be able to produce more cost-effective results as it will eliminate the need to bear most of the costs of the traditional financial system.

As with all decentralized systems, transparency is at the core of the DeFi system. Financial transactions are publicly documented in an open and immutable blockchain ledger (Ahuja et al., 2023). Records of all transactions occurring on DeFi can be tracked on the blockchain but cannot be censored by any authority. In their study Chen & Bellavitis (2020) mentioned that there is a lack of transparency in central financial institutions because these institutions have to secure their central ledgers by restricting access. Also, Schär (2021) indicates that when implemented properly, smart contracts, which are the foundation of DeFi protocols, are very transparent and minimize the danger of manipulation and arbitrary interference.

3.2 Threats

On the other hand, decentralized finance has many problems besides the opportunities it brings. DeFi applications have required the change of the existing financial system, ensuring that central intermediaries are no longer needed, and these intermediaries remain outside the system, and this new situation will create difficulties in developing income sources (Jocham and Abbassi, 2022). The lack of a centralized structure in the decentralized finance system reveals the opportunity for the participants to act independently.

Decentralized Finance uses high volatility cryptocurrencies instead of low volatility currencies used in traditional finance. The volatility of assets provided by the DeFi platform might range from single to double digits or vice versa (Moeller, 2022). These markets, characterized by the trading of high-risk financial assets, establish an unstable making investments environment for investors. Consequently, investors may encounter substantial losses in decentralized markets.

On the other hand, legal problems also affect the development of DeFi. Many institutions, including financial institutions, verify the identity of their customers through Know Your Customer (KYC) systems (Malhotra et al., 2022). Know Your Customer (KYC) is a system designed to authenticate new clients and avoid unlawful acts such as money laundering or fraud, and it complies with Anti-Money Laundering (AML) regulations (IDnow, n.d.). DeFi systems, which continue to expand as a parallel financial system to traditional finance, are required to comply with AML-KYC regulations to facilitate reliability (Salami, 2021). For example, Stablecoins have blacklist applications that prevent some addresses from carrying out transactions, and it is known that they actively operate blacklisting and asset freezing processes on their official websites (Beştaş, 2023). However, this may be perceived as censorship of DeFi and contradicts the logic of DeFi. It is considered that this threat can be eliminated through anonymous third-party authenticator applications. For on-chain verification of credentials, Rathee et al. (2022) SNARK-based Anonymous Credentials for Practical, Private and Accountable On-chain Access Control (ZEBRA) is one of the studies on this subject and the violation of confidentiality revealed by KYC is eliminated.

Although transactions made on the blockchain are seen as secure, it is inevitable that they carry various security vulnerabilities. System exploits can sometimes be the result of a coding error. The precaution to be taken against this will be to spend more budget on software engineers to audit the project code by detecting bugs before attackers (McKay, 2022). On the other hand, hacking and cyber theft attempts should also be considered as an important risk factor. Possible insurance systems are created against the grievances that may occur in DeFi, whose users are increasing day by day.

4. Conclusion

This study intended to enhance comprehension of the DeFi system by clarifying its antecedents, including digital assets, cryptocurrencies, FinTech, and RegTech. Subsequently, a study is conducted to compare the threats, challenges and opportunities that DeFi presents to financial investors with those of the traditional financial system. This research clarifies the advantages and opportunities that DeFi provides, such as expanding the boundaries of the concept of finance, increasing accessibility, being an intriguing and preferable system for future generations, geographical limitlessness, globality, cost effectiveness and transparency, and then central threats such as pushing finance out of the system, offering very high-risk, high-volatility assets, weakness in the audit and legal infrastructure, and lack of security were mentioned.

With the transition from the traditional financial system to the decentralized financial system, new investment tools and new areas have been presented to investors with a freer structure. The FinTech system, which is constantly developing with the integration of technology into finance, has increased efficiency and opened the door to newer finance applications. With the emergence of decentralized finance, decentralized exchanges (DEX), emerged and this system is run by smart contracts.

FinTech companies that follow the rapidly developing technology trend and integrate with the trend technology need to offer more product variety, increased cyber security and more transparent transactions, and these contributions are important in terms of ensuring the stability of the financial markets in the future (Taherdoost, 2023).

DeFi has some advantages over the traditional financial system and has superior aspects compared to the traditional system. The fact that it is still developing does not mean that this system will be excluded by investors. On the contrary, it has started to take its share of the pie in the financial system, and with the development of technology day by day, its usage areas will increase, and it is expected that the amount it will receive from the share will increase.

With DeFi, not only crypto trading can be done, but also transactions such as lending and borrowing. However, it should also be taken into consideration that it is a risky investment platform for financial investors as it provides transaction

diversity and contains more risky and variable assets. Another advantage is the low or no transaction commissions in the DeFi system. Without being affiliated with an institution, investors make transactions by connecting to a protocol and then cut off their relations with the system and keep their money in their wallets. Thus, investors feel the confidence of keeping their money in their own wallet, regardless of an authority.

As it is known, the traditional financial system is subject to strict controls. In fact, the reasons for this are to ensure the financial security of investors. Regulation in DeFi can be much more complicated compared to traditional finance. As Sert (2022) mentioned DeFi prevents decentralized finance from being regulated by a country since it does not move within a geographical boundary (the owner's information is anonymous and the country is not known), and the control of the asset that it does not accept entrusted by the owner of the asset reduces the need for auditing. Greater control of DeFi's liberating financial playground will prevent fraud and abuse. Regulation and supervision of the control and regulatory system with laws will be beneficial in preventing undesirable results. One way to prevent risks that may arise from vulnerabilities in the DeFi system will be the financialization of risks through insurance and controlled smart contracts (Wronka, 2023).

5. Limitations and Recommendations

This study is intended to contribute to both the finance literature and practitioners in the field of finance. The main contribution of the study to both is that it is a comprehensive, methodological and understandable guide on DeFi. Another contribution to the literature is that each of the listed opportunities and challenges offers a separate research area. For practitioners, taking advantage of these opportunities and working to overcome the challenges will accelerate DeFi becoming the financial system of the future.

It is considered that the innovations introduced in the field of decentralized finance and studies carried out on a country basis can be included in subsequent studies. The main limitation of this study is that the interest that DeFi, which is a very new concept, has received from practitioners has not been fully reflected in the academic field. For this reason, there are a limited number of studies on the subject in the literature. A significant part of these studies is in the fields of computing and software engineering. It is inevitable that academicians in the field of finance will show increasing interest in the subject in the following periods.

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