



The trends of decentralized finance (DeFi) as the digital financial ecosystem of the Indonesian community in the metaverse era

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ABSTRACT

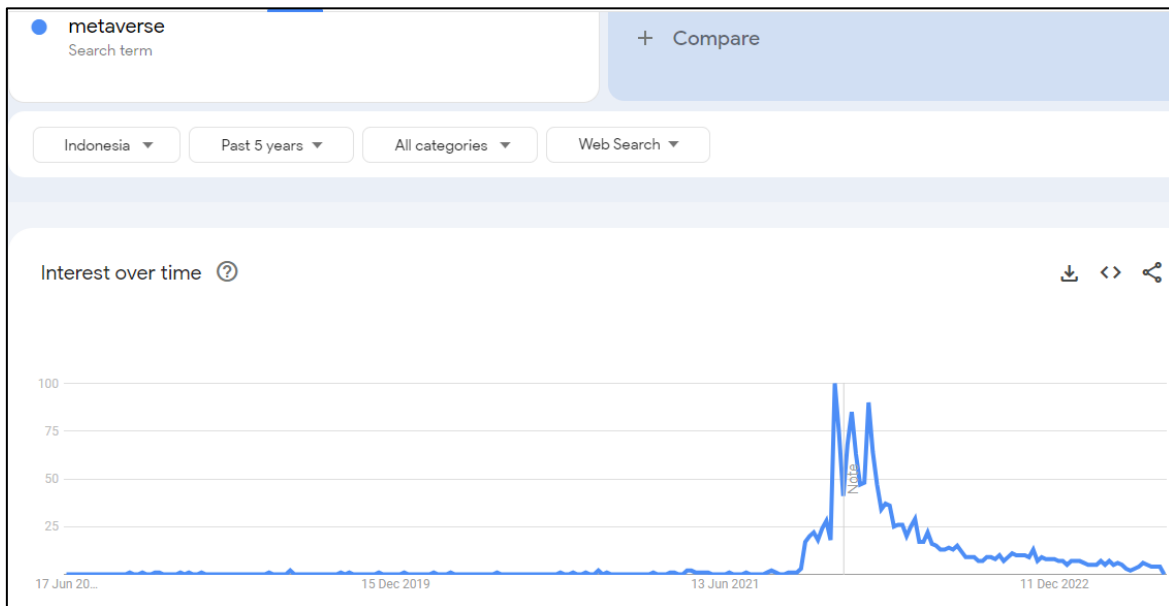
Since post-covid-19, the world of technology has been growing, one of which is digital transformation in the metaverse era. In terms of the economy, there is great potential that if it is prohibited and not utilized it will result in many outgoing investments such as cryptocurrency transactions, and currently, the service is powered by blockchain technology with one of its capabilities, namely decentralized finance. This study aims to determine the concept and popularity of decentralized finance (Decentralized Finance/DeFi) in the metaverse era. The method used in this research is library research through secondary data collection and analysis using qualitative descriptive techniques. The results of this study explain that DeFi is a new ecosystem that has emerged in the world of digital technology powered by blockchain technology and operates without a central authority such as a bank and government interference. The DeFi system is very open to anyone who has an internet connection integrated with smart contracts, the ability of which can reduce costs. In Indonesia, the popularity of DeFi has increased through cryptocurrency trading, namely 17 million customers in 2023 compared to the previous year. Cryptocurrency trading has contributed to the Indonesian economy, namely for the period May - December 2022 in the amount of IDR 246.5 billion, taxes have been collected on cryptocurrency trading. So that in business in the metaverse era, DeFi has a good opportunity to become a new ecosystem to continue to contribute to the Indonesian economy and improve digital technology-based businesses in the metaverse era.

Keywords: Decentralized Finance (DeFi), blockchain; cryptocurrency; metaverse; ecosystem

1. INTRODUCTION

Humans generally have a new lifestyle that cannot be separated from all electronic devices. Technology is a tool that can help most human needs to make it easier to do whatever tasks and work. It is this important role of technology that has brought human civilization into the digital era (Setiawan, 2017). From time to time, technological advances continue to develop, starting from the agricultural technology era, the industrial technology era, the information technology era, to the information and communication technology era (M. Danuri, 2019). This development also influences the development of science and various other aspects as well as the occurrence of new phenomena in the world (Putra, 2018).

The phenomenon of digital currency is no longer common in the current era or is commonly referred to as business in the metaverse era (Sektianingsih, 2022). Metaverse is a virtual space that connects all virtual worlds through the internet and augmented reality. During the Covid-19 pandemic which occurred about 2-3 years ago, virtual spaces such as teaching and learning processes used an online system (Bonafix & Nediari, 2022), business transactions used digital, and finally digital assets emerged which were increasing. used in financial services including asset exchange, lending and borrowing, investing, buying and selling of images, and photos through services that exist in cryptocurrencies, namely DeFi and NFT.



Source: <https://trends.google.com/trends/explore?date=today%205-y&geo=ID&q=metaverse>

Figure 1. Metaverse Trends Based on Google Trends (2019-2022)

The world mentioned above is a world that must be learned immediately because now it is no longer foreign, it has even become a daily necessity. This means that society has been faced with the metaverse era, where everything can happen virtually by utilizing the three main elements of the metaverse namely (1) Virtual Reality, Augmented Intelligence; (2) Blockchain technology; and (3) Web 3.0 technology. Investors are eyeing the growing metaverse growth, which has been interested from the start to invest fantastic amounts of assets. The presence of the metaverse is also inseparable from cryptocurrencies as a transaction and investment tool. In particular, cryptocurrencies with DeFi and NFT services are claimed to be the means of payment in the future. There is another possibility of not paying using conventional money which differs from country to country and is often unstable (Perbanas, 2021). And now the service is powered by blockchain technology with one of its capabilities, namely financial decentralization.

In Indonesia itself, cryptocurrency assets are increasingly being used as an investment tool. The Ministry of Commerce has noted that virtual currency transactions in Indonesia have soared to IDR 370 trillion in May 2021. According to the Letter of the Coordinating Minister for the Economy Number S-302/M.EKON/09/2018 dated 24 September 2018 concerning the Follow-up Implementation of Coordinating Coordination Meeting on Crypto Asset Management explained that crypto assets are still prohibited as a means of payment, but as an investment tool are permissible and can be included as commodities that can be traded on futures exchanges. Consideration, economically the investment potential is large and if it is prohibited it will have an impact on a large number of outflows of investment (capital outflow) and there will be many digital transactions that can compete with classic transactions because consumers will look for markets that legalize crypto transactions (BAPPEBTI, 2020). And currently, the financial service that is increasingly used by digital enthusiasts in the metaverse era is DeFi.

Previous research by Nydia Remolina entitled "Decentralized Finance: Implications of The So-Called Disintermediation of Financial Services" stated that the growth of DeFi was also due to bringing benefits including innovation, financial inclusion, and cost reduction (saving costs). This service also challenges traditional markets such as the financial (banking) sector because every transaction in DeFi does not require permission from institutions, policymakers, or other authorities (Remolina, 2022). However, if you look at the advantages that exist in DeFi, this service may have minimal risks or deficiencies. For this reason, it is important to carry out further research on how decentralized finance (DeFi) is trending in the metaverse era.

In Indonesia, the first company to use blockchain technology was PT Hara Ledger. Through the blockchain, consumers can easily and transparently find out about the process of slaughtering chicken according to halal provisions, from the beginning to the end of the process (Asosiasi Blockchain Indonesia, 2022). Through the security and complexity of this blockchain system, a DeFi service user needs to be careful in filling in data and disseminating private information. Because in this system, data that has been filled in and published cannot be changed and deleted at any time. The appeal of DeFi goes beyond creating a very promising future economic and investment opportunity.

However, it can also be a financial transaction that rivals the banking system. For this reason, it is necessary to carry out research regarding DeFi trends in the metaverse era.

2. METHODS

The research design uses library research. Literature research is a study that studies reference books and previous research results that are similar and useful for obtaining a theoretical basis related to the problem to be studied (Sarwono, 2006). This research approach is exploratory. An exploratory approach or exploratory research is a type of research carried out to discover new knowledge and problems in a scientific field. The problem in this research is a new research problem and has never been known before. The purpose of the exploratory research approach is to map an object in a relatively deep manner.

The bibliographical method is a report from research carried out on a particular problem to describe to readers what will be known and not known to obtain truth in the research idea (Tewksbury, 2013). The data collection used is secondary data obtained from various credible journals, books, websites, and documentation (Waharini & Purwantini, 2018) by managing discussion material and collecting library data through reading, recording, and collecting it (Nursalam, 2016). This research was conducted from March to June 2023. The data source in this study was obtained from secondary data. Secondary data sources are data obtained through other parties, indirectly obtained by researchers from their research subjects. The secondary data in this study were taken related to the research topic, namely the trend of using DeFi as a decentralized financial service in the metaverse era.

To obtain high credibility, researchers must be sure that the documents or manuscripts obtained are original or authentic. Data collection in literature research is carried out in stages and researchers must have abundant data from the results of data collection efforts. The definition of data collection techniques according to Arikunto are ways that can be used by researchers to collect data, where these methods show something abstract, that cannot be realized in visible objects but can be demonstrated using it (Arikunto Suharsimi, 2013). Collecting data in this study through several stages, namely, First, literature study or observation of literature this method is used to examine literature or writings that have something to do with the subject matter discussed. Then secondly, the existing literature is classified according to its relationship with research. Third, a review is carried out, namely by reading, studying, or studying the literature that presents problems related to research.

For this reason, there are several data collection techniques used by researchers in this study, namely:

1. Observation, according to Creswell (2018), there are four types of qualitative data collection techniques, one of which is observation. This technique is a way of collecting data by observing, then recording every need for research results during

the observation period. Because DeFi transactions are digital, observations are made on an online web network.

2. Documentation, in addition to observation this collection technique is also one of the techniques revealed by Creswell (2018). Documentation is the process of collecting, selecting, processing, and storing documents in the field of knowledge.
3. Editing, is a data collection technique by re-examining the data obtained, especially in terms of completeness, clarity of meaning, and harmony of meaning.
4. Organizing, is a technique of organizing the data obtained with the framework that is already needed.
5. Finding, is a technique of advanced analysis of the results of organizing data using predetermined principles, theories, and methods so that conclusions are found which are the results of the answers to the problem formulation.

The collected data were analyzed using a qualitative descriptive analysis method. Descriptive qualitative is a research method based on the philosophy of postpositivism used to research natural object conditions (as opposed to experiments) where the researcher is the key instrument. Qualitative emphasizes meaning rather than generalization (Sugiiyono, 2019). So this research was carried out systematically to collect, process, and conclude data by using literature, either in the form of books, notes, articles, or reports on the results of previous studies which are useful for obtaining a theoretical basis and seeking answers to the problems studied.

3. RESULTS AND DISCUSSION

a. Decentralized Finance (DeFi) & Centralized Finance (CeFi)

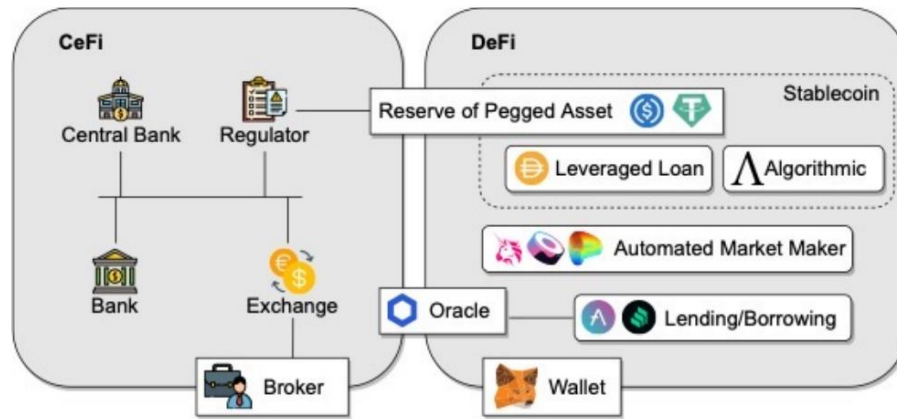
Decentralized finance (DeFi) is an emerging ecosystem in the world of blockchain technology and it refers to various financial applications and platforms working on decentralized networks such as Ethereum. Simply put, DeFi is a new way to spend money with financial services that don't rely on traditional banks or financial institutions. Instead, it uses blockchain technology to create a decentralized and transparent system accessible to everyone. One of the main advantages of DeFi is its ability to democratize finance. Traditionally in finance, access to financial services is often limited to: A select few who have the tools and resources to navigate complex systems. DeFi, on the other hand, is open to anyone with an internet connection, regardless of their location or income level. Another advantage of DeFi is its ability to reduce costs. Traditional financial systems often involve intermediaries such as banks and brokers which can make doing this expensive and slow. DeFi eliminates the need for brokers by using smart contracts, which are self-executing programs that automatically enforce the terms of an agreement between parties. DeFi also offers a high level of transparency (Nath, 2023).

So DeFi is a new model of financial services in regulating and activating transactions, exchanges, and financial services that use smart contracts powered by the Ethereum blockchain to obtain loans and collateral in the form of crypto assets. With blockchain technology, every individual can transfer crypto assets from their place to all corners of

the world without the need for any institutional authority intermediaries. DeFi does not require intermediaries like banks or other financial services companies even without government intervention because all transactions are carried out automatically through smart contracts.

Meanwhile, centralized finance is financial services with a centralized system like banks and traditional financial institutions that have existed in the banking world. However, in the crypto world, CeFi refers to financial services with various features offered by DeFi using systems and operations such as institutions. traditional finance. So, CeFi is a financial service provider that offers its users facilities through an integrated system and can borrow or lend their cryptocurrency through a centralized exchange. At CeFi, users cannot access their own funds but must do so via a centralized exchange account. The central exchange is the administrative authority for CeFi crypto funds, so users have to provide some personal information about funds held by CEX (Centralized Exchange) based on trust. There are intermediary institutions (brokers) that manage assets and user funds. Therefore, users are charged administrative fees, service fees, and other fees for using centralized funds. The concept of centralized financing is similar to systems in traditional financial services or banking (Sektianingsih, 2022). So the concept of CeFi is the opposite of DeFi.

With the advent of blockchain and its decentralized and permissionless nature, a new currency has emerged that must be considered. One of the strongest innovations of blockchain is the transfer and trading of financial assets without a trusted intermediary. In addition to this goal, Decentralized Finance (DeFi), a new sub-area of blockchain, specializes in the development of technologies and financial services on top of ledgers that enable smart contracts. DeFi supports most of the products available from CeFi: Asset exchange, lending, trading, decentralized governance options, stablecoins to achieve fast-growing, and some more complex products. Unlike traditional centralized financing, DeFi offers three features: 1. Transparency. In DeFi, users can control these rules according to which financial assets and products operate. DeFi seeks to avoid private contracts, post-contracts, and centralization, which are the main factors limiting the transparency of CeFi. 2. Instructions. DeFi offers control to its users by enabling them to remain custodians of their assets, which means that no one else can censor, transfer or destroy any of the user's property without the user's consent. 3. Ease of use. Anyone with a mediocre computer and internet connection and data can create and deploy DeFi products, while blockchain and its decentralized mining network continue to use DeFi applications effectively. above and beyond, the financial advantages of DeFi are also in stark contrast to Cefi (Qin et al., 2021).



Source: (Gervais, 2021)

Figure 2. CeFi vs DeFi

b. Decentralized Finance (DeFi) Protocol

DeFi works broadly as a financial application that runs on smart contracts on the blockchain. 5 main elements work in DeFi:

1. Blockchain

Blockchain, which provides a ledger where transactions are recorded and remain immutable. Until recently, DeFi was based on public ("permissionless" blockchains); available to potential participants, and ensures transparency and legitimacy trust of their records thanks to validators (Aquilina et al., 2023). Blockchain takes care of DeFi with its processes being protected with locks. When using an encrypted key, the user receives unique identification information, typically a public or private key pair, and the process cannot be accessed by others. The operational process of using key pairs to encrypt information is very popular outside of Blockchain, it is also often called asymmetric cryptography.

2. Smart Contracts

Smart contracts are computer programs stored on the blockchain that operate under certain conditions. They automate the execution of transaction agreements, so that all participants can immediately be sure of the results and profits without involving intermediaries or wasting time. Smart Contracts sit on top of the blockchain and are the building blocks of all decentralized applications (DApps) (Aquilina et al., 2023). Tokens on the blockchain are usually created through a smart contract. Ultra-smart contracts typically include state variables that store each user's token balance and various functions that allow the state variables to

be modified by token balances (John et al., 2022). For example, one of the typical functions in a token smart contract is a function that transfers tokens from one user to another by allowing the user to reduce his balance by a certain amount and increase the balance of other users by the same amount. Most importantly, the status that tracks token balances is the authority regarding token ownership; thus, any changes in holding token balances directly correspond to the completion of the transfer of token units.

3. Cryptocurrency

Cryptocurrencies are used to represent and transfer transaction value, which is why cryptocurrencies are such an important part of the DeFi ecosystem. In this article, we refer to a crypto asset as any digital resource that uses cryptography and distributed ledger technology and represents an economic resource or value to an individual. In decentralized ecosystems such as DeFi, they can be used, among other things, as an exchange, for investment purposes or to provide goods or services (Auer et al., 2023). With cryptocurrencies, the user's public key acts as the user's digital wallet. Users can buy, sell or send cryptocurrencies using private keys. Therefore, users must keep it safe.

4. Private Key Authority

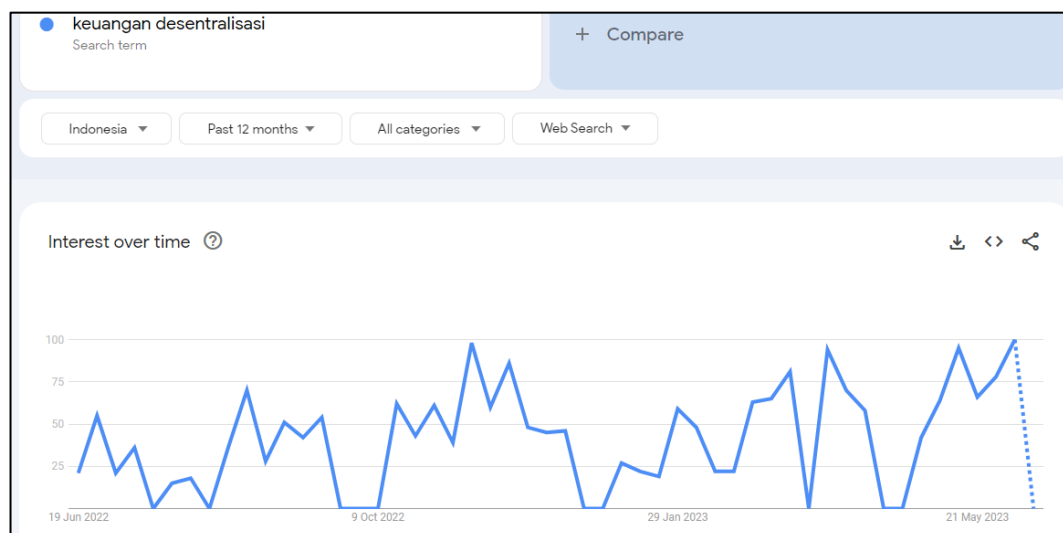
Users use private key authorization to send transactions. When the user does this, the system creates a block that represents the transaction and notifies the system for others to review (verify). Until someone else validates the request and confirms that it is valid, then the user's transaction request is executed and the block is added to the ledger.

5. ID and Timeframe

All blocks are assigned a unique token and time frame to prevent any kind of bad activity. DeFi systems will give you freedom, users are assigned a pseudo-anonymous address, so no one can see the username, but they can see the username containing random numbers and letters.

c. The Potential and Popularity of Decentralized Finance (DeFi)

Based on Google trends, decentralized finance is currently the most frequently used and in demand by people in Indonesia, as shown in the image below:



Source: <https://trends.google.com/trends/explore?geo=ID&q=Keuangan%20Desentralisasi>

Figure 3. Decentralized Finance Based on Google Trends (2023)

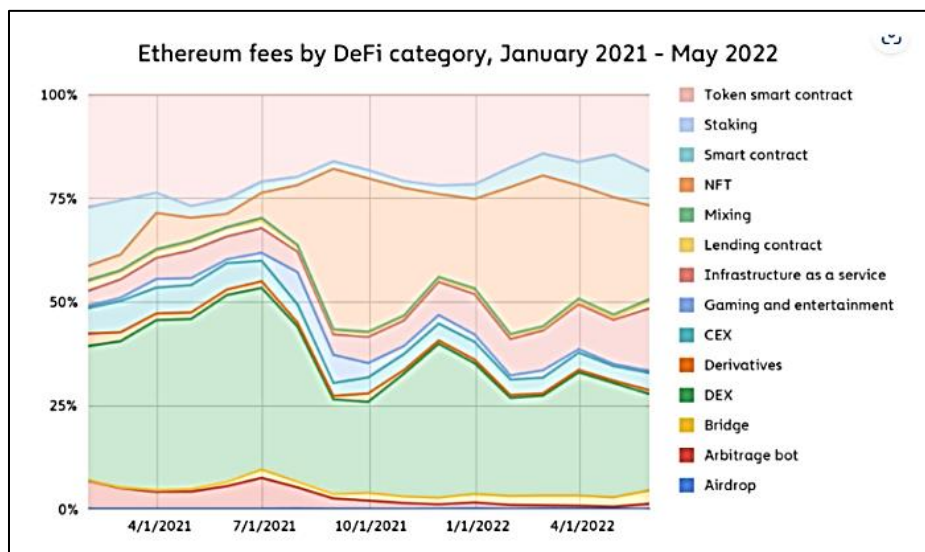
Reasons for using decentralized finance (DeFi) include:

- a. DeFi maximizes opportunities to use blockchain networks. DeFi not only makes it easier for users to access financial services but also helps them access financial services quickly.
- b. DeFi makes it easy for users to carry out financial transactions without intermediaries. The use of DeFi makes it easier for users to carry out financial transactions, such as borrowing and lending money, directly in two directions (peer-to-peer) without intermediaries.
- c. DeFi technology makes it easier for users to access financial services. DeFi technology makes it easier for users or the public who have difficulty accessing financial services for various reasons, such as banks refusing to apply for loans, or refusing to apply for insurance because of an excessive risk profile. Thanks to decentralized financial technology, people can easily access financial services without having to go to a bank or other financial services.
- d. DeFi applications increase the price of Ethereum.

DeFi is an application that uses a network of smart contracts developed by Ethereum and is currently not owned by any other cryptocurrency or Bitcoin. This makes Ethereum better than Bitcoin, which is why many investors now consider Ethereum a cryptocurrency because it can be used for financial services. In addition, if the trend of using DeFi applications soars, the price of Ethereum will explode in the future.

- e. DeFi applications are free of administration fees and transaction fees. DeFi applications do not apply to financial institutions or other services, because transactions can be carried out directly by users, so there is no need to pay administration fees and transaction fees to certain institutions. In addition, transactions in DeFi systems are processed transparently, so that abuse can be kept to a minimum.

After post-covid -19 the use of DeFi has experienced a spike in increase in 2021-2022. This is evidenced by the DeFi category on Ethereum which is the most frequently used. Chain analysis reports that from January 2021- May 2022 the highest usage of smart contract tokens was (a lot of) used. As in the image below:



Source: <https://blog.chainalysis.com/reports/web3-layer-1-blockchains/>

Figure 4. Use of the DeFi Category on Ethereum 2021-2022

The above popularity is continuously increasing and attracting more and more attention from users and investors. According to Chainalysis's report that in the 1st quarter of 2022, 175 billion USD were sent to Centralized on a centralized database and recorded on their order books to save on transaction costs, every DeFi transaction occurs through on-chain smart contracts. For this reason, as well as the rapid growth of DeFi in general. In Indonesia itself, the development of crypto asset trading is increasingly interesting from year to year. The Ministry of Commerce has noted that the transaction value of crypto assets in Indonesia is IDR 859.5 trillion in 2021 and in the January-February 2022 period it was recorded at IDR 83.8 trillion (RI, 2022).

The momentum of trading in physical crypto assets has indeed experienced ups and downs for several years. The January-February 2023 transaction value was IDR 25.94 trillion, down 69% from the same period in 2022 which was IDR 83.8 trillion. The five crypto types with the highest transaction values at the moment are Ethereum (ETH), Tether (USDT), Bitcoin (BTC), Dogecoin (DOGE), and Terra (LUNA). It's early 2022 and it is estimated that the world will still be in the crypto winter phase until 2023. This means that crypto asset trading has been down for most of the year. Meanwhile, on the other hand, there was a significant increase in the number of customers. In February 2023 there were 17 million subscribers (an average increase of 500,000 subscribers per month) compared to 16 million in the previous year (RI, 2023). Trading crypto assets brings advantages in terms of boosting the national (Indonesian) economy, especially through taxes on government revenue. Between May and December 2022, IDR 246.5 Billion has been collected in taxes on physical cryptocurrency trading, according to the Directorate General of Treasury Taxes (DGT). Thus the growth of crypto assets will continue and there will be more and more enthusiasts because they have advantages that are almost not shared by other business transactions.

d. Advantages and Disadvantages of Decentralized Finance (DeFi)

Table 1. Advantages and Weaknesses of Using DeFi Applications

	Advantages	Weaknesses
Security/Protection System	DeFi uses blockchain technology so that data and information will be immutable (no one can change) so that higher security can be ensured and flexibility is also better to be audited in financial procedures and operations.	There is a threat of hackers. DeFi has offered many promising features and platforms, but hacker threats must still be watched out for.
Permits/Regulations	DeFi systems based on blockchain have free access properties. The use of DeFi as a decentralized financial system can be accessed directly by its users without dependence or without requiring permission from banks, institutions, companies, or service authorities, and without government interference.	Lack of consumer protection. with the potential and benefits of DeFi which is now growing rapidly without any regulations that can protect consumers.
Transparency	The system of transparency in DeFi through the Ledger (ledger) contained in the blockchain displays all activity information in the blockchain network such as recording audit trails and identifying who made changes to a transaction in what way and at what	DeFi private users are required to secure access and wallets used to store cryptocurrency assets through their private keys and unique codes. If they lose their private key they will be restricted from accessing all information and

	time. The cryptographic principles of the blockchain will also ensure documentation and will avoid possible negative business and financial fraud. All such information will be provided and appear when verifying the authenticity of the private key.	will lose access to their funds forever
Borrowing and Savings features	<ul style="list-style-type: none">- DeFi provides lending and borrowing applications by providing smart contract integration (smart contracts) for all users to be connected, but this integration does not require intermediaries such as banks to verify processes and parties that make lending and borrowing transactions. DeFi does it easily and quickly and without notary fees, administration, and so on.- DeFi also provides a savings app. Users will be considered as investors because they are used to managing their savings. Users will benefit from the assets they own and are locked in a lending protocol built by the Ethereum blockchain that allows users to carry out activities providing loans, or borrowing with the guarantee of their assets that will be locked into the protocol.	DeFi is not responsible for user errors. Each party that transacts such as lending and borrowing, saving, exchanging assets, and buying other assets must be responsible for the activities they carry out. DeFi only eliminates intermediaries and costs arising from these activities.

DeFi provides an overview of opportunities for the digital world, and how many opportunities can be presented by utilizing digital finance. DeFi as part of implementing blockchain and using digital assets as the main assets traded opened many people's eyes that digital assets can be valued so high. This also opens up opportunities for implementing the DeFi concept not only for buying and selling digital archives but as a means of proving the authority or person in charge of an asset. Digital assets that exist on the blockchain network can be used as a means of proof in many aspects of life such as ownership of assets in physical form such as land, buildings, cars, and the like. Or any other use case you can think of. The hope is that the continued development of technology will not leave the world of digital assets, but will instead make digital finance more usable in many aspects (Noor, 2021).

One of the most positive potential benefits of DeFi relates to financial inclusion and DeFi's potential to serve underserved sectors of society such as small micro enterprises

(SMEs). As the spearhead of the country's economy, SMEs need to increase their business effectiveness (Kadir & Abdullah, 2019). SMEs are expected to have a competitive advantage that can differentiate from other business organizations (Kadir, 2019). SMEs can maintain their business and improvement in the future (Kadir et al., 2019). For this reason, if people are literate or understand decentralized finance, it will increase their business profits (Abdullah et al., 2020). So that the products marketed by SMEs will be more varied in the framework of domestic and foreign production (Kadir, 2022). According to proponents of the claimed benefits, since the post-covid-19 era DeFi can replace some banking services and change the inflexibility of current processes, allowing SMEs to quickly and easily benefit from better liquidity and alternative credit possibilities. However, this kind of claim has not been proven empirically. For example, for SMBs to use DeFi lending services, they must hold crypto assets as collateral, which means they are exposed to price volatility unless they decide to use a truly stable stablecoin. In this scenario, SMEs can obtain crypto asset loans without having to assess their risk profile. However, SMEs face important obstacles, such as related to adequate knowledge of the crypto asset market and its technology, as well as understanding DeFi services, which are sometimes sophisticated for the average consumer. DeFi features are not widely known, so the DeFi market is not as big as traditional financial systems. This makes it difficult for users to trust the industry which is not as much as the financial sector in general.

Regulating and controlling DeFi services related to governance is a challenge for DeFi users. Nominally distributed governance structures (e.g. governance run as governance by voting token holders) combined with permissionless blockchain pseudonyms result in decentralized accountability (Board, 2022). Therefore, it is difficult to identify responsible actors and coordinate the activities of entities with managerial powers or to identify other regulatory points of contact that could facilitate the changes recommended by regulators/supervisors. In addition, when participation is low, it is easier to make malicious changes to the code. Due to the governing structure of the DeFi service, it is not clear whether the service is within the limits of the authority. Current regulations focus on identifying the legal entity or individual responsible for providing these financial services.

CONCLUSION

The phenomenon of digital currency is no longer uncommon in the current era, commonly referred to as business in the metaverse era. The metaverse is a virtual space that connects all virtual worlds through the internet and augmented reality. After post-Covid-19, the use of virtual space in metaverse businesses, such as cryptocurrency transactions in decentralized financial services (DeFi), experienced a significant increase in 2021-2022, as reported by Chainalysis. In Indonesia, according to the Letter of the Coordinating Minister for the Economy Number S-302/M.EKON/09/2018 dated 24 September 2018, regarding the Follow-up to the Implementation of the Coordination Meeting for Crypto Asset Management, cryptocurrency is prohibited as a transaction tool but is permitted as an investment tool. Economically, the investment potential is substantial, and if it were prohibited, it would result in a significant outflow of investment

(capital outflow). There would also be numerous digital transactions competing with traditional financial transactions because consumers would seek markets that legalize crypto transactions. Capital outflows would potentially disrupt national financial stability. In February 2023, there were 17 million subscribers, with an average increase of 500,000 subscribers per month, compared to 16 million in the previous year (RI, 2023). Trading crypto assets brings advantages in terms of boosting the national Indonesian economy, especially through taxes on government revenue. From May to December 2022, IDR 246.5 billion has been collected in taxes on cryptocurrency trading, adding to the income and revenue of the Indonesian state.

DeFi, as a financial service, is very accessible to anyone with an internet connection and offers smart contract integration for all users, regardless of their location or income level. Another advantage of DeFi is its ability to reduce costs. Traditional financial systems often involve intermediaries such as banks and brokers, which can be expensive and slow. DeFi eliminates the need for intermediaries like brokers by using smart contracts, which are self-executing programs that automatically enforce the terms of an agreement between parties. DeFi also offers a high level of transparency and security, providing features for users to transact with each other on loans and borrowing. However, it has not been empirically proven that SMEs can access DeFi services as a substitute for banking services. Supporting SME business development by using lending services available on DeFi to obtain better credit/financing alternatives is crucial. SMEs must have crypto assets as collateral to access these services. Therefore, in the business of the metaverse era, DeFi has a significant opportunity to become a new ecosystem contributing to the Indonesian economy and improving digital technology-based businesses in the metaverse era.

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