



Study on NFT Market Ecology and Pricing Mechanism from the Perspective of Economics

Dahe Zhang^(✉)

The High School Affiliated to Renmin University of China, Beijing 100083, China
zhangdahe1011_11@126.com

Abstract. Non homogeneous token (NFT) based on blockchain is a kind of digital asset ownership recorded on blockchain, which is unique, irreplaceable and indivisible. As a core requirement in the smart economy, NFTs have been widely used in collectibles, encrypted artworks and games. Firstly, this paper expounds the development history of blockchain and NFT Technology. Then, from the perspective of market value, scarcity, application field, market transaction status and market risk analysis, the market ecology of NFTs is systematically expounded. Finally, the main influencing factors, pricing mechanism and main trading modes of NFT value evaluation is summarized.

Keywords: Non-Fungible Token, Pricing Mechanism, Market Ecology the total balance of non-performing loans of major commercial banks shows a rising trend, which not only seriously weakens the economic support role of commercial banks, but also seriously affects the net profit income and economic asset quality of commercial banks. The national financial system under macroeconomic cognition adheres to the business philosophy of simultaneous development of indirect financing and direct financing, which means that if commercial banks have a credit crisis, it will cause a total collapse of the national financial system. In order to cope with the above problems, this paper conducts a study on the influence of macroeconomic factors on commercial banks' non-performing loans, defines the meaning of non-performing loans by analyzing the concepts related to macroeconomic factors, and then starts from the perspective of classifying commercial banks' non-performing loans and studying their industry distribution characteristics and financial vulnerability. According to the logical framework presentation, the ability of four categories of factors, namely, economic growth, inflation, unemployment, and monetary policy, to influence commercial banks' non-performing loans is determined separately.

Keywords: Non-Fungible Token · Pricing Mechanism · Market Ecology

1 Introduction

At present, the digital economy has brought a transformative direction to the development of the whole society. In particular, the blockchain technology that has emerged in the past decade provides a brand-new development opportunity for the digital economy, especially the creation and use of digital assets, with its unique distributed ledger and

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non tamperable and traceable technical characteristics. At the same time, with the continuous improvement of the impact of blockchain technology on social and economic development, blockchain technology, as a new digital technology, has been gradually promoted to the national development level, achieving the deep integration of science and technology and the real economy, and is providing a new paradigm for high-quality social and economic development.

The development of blockchain technology in the financial field initially started with private digital currency. After experiencing the debate and exploration of the theoretical circle and the frenzied pursuit of the market, it has entered the rational development stage of central banks around the world in developing legal digital currency and securities tokens in the financial market [1]. After 2021, non-fungible token (NFT) derived from Ethereum ERC-721 and ERC-1155 standards began to become another new field in the financial market. As a token representing digital assets, it is a rare, inseparable and irreplaceable unique digital project, and by storing the actual content in the metadata as a simple URI string, it has established a new ecosystem with digital asset ownership on the blockchain.

In 2021, the transaction volume of NFT surged from \$85.7 million in 2020 to \$19.6 billion. According to research by Nonfungible.com, in 2021, more than 2.5 million cryptocurrency wallets worldwide held or traded NFTs, far higher than 89 thousand in 2020. The number of NFT buyers also jumped from 75000 to 2.3 million [2]. NFT, which integrates transaction volume, number of works, user volume, featured product functions and cutting-edge technologies, will soon become a new gathering place of world traffic.

In combination with the fair, transparent and non tamperable characteristics of blockchain technology, China will continue to optimize industrial resources in the future, build a new NFT ecosystem covering the traditional whole industrial chain through the circulation of digital assets, and realize the data flow between different data management platforms in the industry, which is widely used in consumption, trading, social networking, finance, sharing and other scenarios.

2 Literature Review

2.1 Research Progress on Blockchain

Blockchain is a new decentralized data collection, sharing and storage technology, which provides a variety of transparent, secure, tamper resistant, secure and robust ledger services for various real-world use cases. In recent years, the blockchain technology itself and the application of blockchain have made significant development [3]. Compared with the existing traditional decentralized database storage methods, blockchain has special performance and advantages, and has attracted more and more attention from the academic and industrial circles. Public blockchains, such as bitcoin, can make data available on every node, thus making every participant transparent.

Blockchain has been proved to be a remarkable success in cryptocurrency applications such as bitcoin [4], Ethereum [5], and PeerCoin. The adoption of blockchain in many other fields is a continuous expansion of the existing blockchain ecosystem. For example, blockchain support systems have been developed in the fields of financial ledger

system, Internet of things (IOT), edge and cloud computing [6], public management, medical health and supply chain.

Most of the existing relevant studies are limited to specific research topics. Wang et al. [7] and Singh et al. [8] investigated the recently popular blockchain consensus mechanism. Zhou et al. [9] summarized the existing solutions to solve the problem of blockchain scalability. Zhang et al. [10] and Feng et al. studied the security and privacy protocols of blockchain systems. Zhang et al. tried to analyze how the blockchain system can well support the privacy and security requirements of transactions, and concluded that only a small number of blockchain platforms can achieve security goals in practice. Zou et al. [11] extensively reviewed the development of blockchain in cloud computing, and believed that cloud is a kind of blockchain service, in which blockchain assists can provide services, and blockchain is a kind of cloud service, in which blockchain services are deployed on the cloud.

2.2 Research Progress on NFT

The establishment of NFT requires an underlying distributed ledger for records, together with exchangeable transactions for trading in the peer-to-peer network. This report primarily treats the distributed ledger as a special type of database to store NFT data. In particular, we assume that the ledger has basic security consistency, completeness, and availability characteristics. Based on that, we identify two design patterns for the NFT paradigm. The former protocol is established from top to bottom with a very simple yet classical path: building NFT from the initiator, and then sell them to the buyer. In contrast, the later route reverses this path: setting a NFT template, and every user can create their unique on top NFT. We separately provide detailed protocols of these two design patterns as below. To be noted, for both of them, they still follow a very similar workflow when executed on blockchain systems, as shown in Fig. 1, meaning that different designs will not change the underlying operating mechanism.

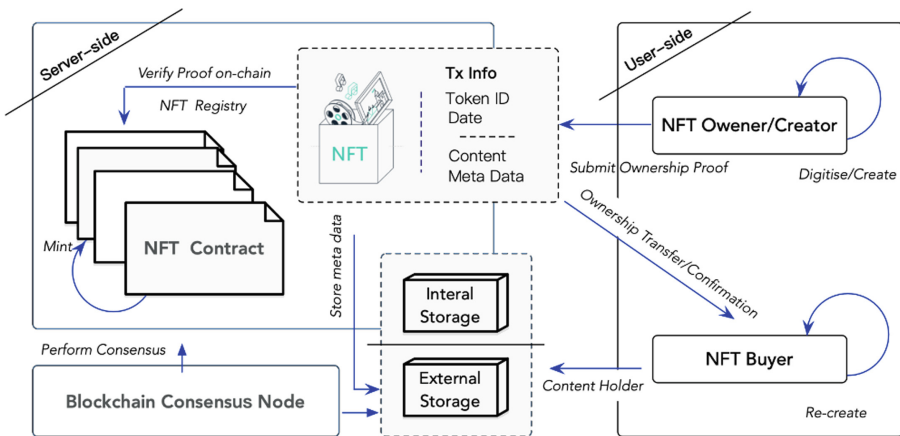


Fig. 1. Workflow of NFT Systems (Source of the figure:original)

The token standards related to NFT include ERC-20, ERC-721, and ERC-1155, and These standards have a great impact on the ongoing NFT schemes [12]. The most prevailing token standard comes from ERC-20. It introduces the concept of fungible tokens that can be issued on top of Ethereum once satisfying the requirements. The standard makes tokens the same as another one (in terms of both type and value). An arbitrary token is always equal to all the other tokens. This stimulates the hype of Initial Coin Offering (ICO) from 2015 to present. A lot of public chains and various blockchain-based Apps gain sufficient initial fundings in this way. In contrast, ERC-721 introduces a NFT standard that differs from the fungible token. This type of token is unique that can be distinguished from another token. Specifically, every NFT has a uint256 variable called token Id, and the pair of contract address and uint256 token Id is globally unique. Further, the token Id can be used as an input to generate special identifications such as images in the form of zombies or cartoon characters.

Another standard ERC-1155 extends the representation of both fungible and NFT. It provides an interface that can represent any number of tokens. In previous standards, every token Id in contact only contains a single type of tokens. For instance, ERC-20 makes each token type deployed in separate contracts. As well, ERC-721 deploys the group of NFT in a single contract with the same configurations. In contrast, ERC-1155 extends the functionality of token Id, where each of them can independently represent different configurable token types. The field may contain its customized information such as the metadata, lock-time, date, supply, or any other attributes. Here, we provide an illustration to show their structures and aforementioned differences, as shown in Fig. 2.

Since NFT can provide provable uniqueness and unique attributes of ownership for digital related products, they have caused huge shocks in the field of digital assets and triggered widespread attention and discussion. At present, the research on NFT mainly includes the following three aspects.

Research on the connotation and future value of NFT. Qin Rui et al. [13] and Zhang Jianzhong believed through research and analysis that NFT are in essence a special,

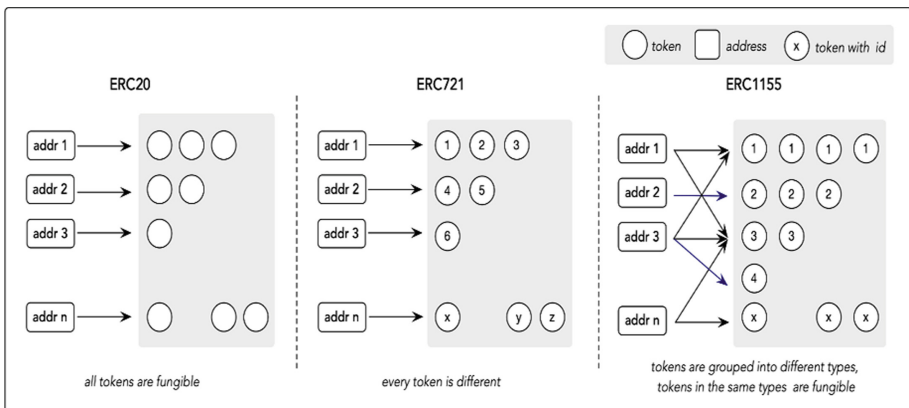


Fig. 2. NFT-related Token Standards (Source of the figure: original)

scarce and unique digital asset on the chain, which can transfer its ownership through smart contracts and record the whole process of ownership transfer through blockchain; at the same time, it can be used to verify the authenticity and ownership of digital assets, so it is widely used in the art market. Wang Gongming [14] started from the characteristics of non-homogeneous tokens, and believes that non-homogeneous tokens can better provide online channels for works of art based on their characteristics, improve the digitization level of works of art, so as to realize the exchange of needs between the real world and the blockchain world, and establish an effective NFT Art market.

Research on legal supervision of NFT transactions and technical risks. Si Xiao's [15] research showed that, from the perspective of legislative supervision and legal application, unlike the previous online virtual property, as a NFT of new intangible assets, it should be legally protected as a real right object. The research of Jiang Zhefeng [16] and Peng Zhubin further analyzed the legal regulatory challenges of NFT digital works, and believes that based on the current research situation of NFT regulation in China, there are large institutional design and practical obstacles in both policies and regulations and netizen regulation.

Research on the application scenarios and practical significance of NFT. Zhang Zhanpeng et al. believed that NFTs, in addition to their outstanding performance in crypto digital art, can map real-world software purchase and subscription behaviors into the virtual world by virtue of their unique and irreplaceable digital characteristics. Chen Miao and Xiao Peng [17] focused on non-homogeneous tokens, analyzed the application of non-homogeneous tokens in library science related fields, and believed that non-homogeneous tokens can carry out "authenticity" tests in Library Science and other fields with their authenticity certificates, which has an impact and revolutionary impact on the field of library science. Shi Anbin and Yang Chenxi [18] explored the practical application of NFT from the cutting-edge development path of the news and media industry, and believed that the historical value of news content makes it possible to apply NFT.

3 Market Ecology Analysis

3.1 Market Value and Scarcity

NFT represents the sole ownership of digital assets, but a reasonable distinction should be made between the NFT of complete virtual items and the form of NFT with physical existence. When NFTs represent virtual properties that only exist in the digital world, such as in-game tokens, holding NFTs represents ownership of virtual properties. However, when NFT is represented as a digital form of physical property, holding NFT does not mean that you enjoy the ownership of physical property. In an NFT transaction, the NFT whose ontology is a virtual item transfers its ownership after the transaction is completed.

In December 2020, Jack Dorsey auctioned off his first-ever tweet, published in 2006, in the form of an NFT, with a hammer price of \$2.91 million. In this transaction, the creator of NFT got tangible benefits, while the buyer of NFT only received a bunch of electronic data and a picture or a link while paying a high price. Even if you have the ownership of the NFT, you cannot prevent other Twitter users from copying, taking

screenshots, etc. of the tweet. Article 2 of the Regulations for the Implementation of China Copyright Law stipulates that a work must be both original and reproducible. Originality means that the work should be the result of the author's independent creation and some novelty, and the above-mentioned Jack Dorsey tweet clearly lacks originality. Therefore, it cannot be defined as a "work" and cannot be protected by copyright law. A creation that can't even be identified as a work, after being endowed with NFT attributes, it can be auctioned for a sky-high price of nearly three million US dollars, which has to raise a question: are NFTs really inherently scarce, or are they just artificially defined as "scarce"? At present, there is still a lack of sufficient understanding of the intrinsic value of NFT, and a universal judgment standard has not yet been formed. In the long run, the problem of using NFTs for money laundering may arise. Due to regulatory and judicial lag, it is difficult to limit the conversion of stolen money into virtual currency on the blockchain and used to purchase NFT works. Although various information of the transaction is recorded on the chain, it will be very difficult to judge the legitimacy of the transaction due to the inability to estimate the price of its reasonable transaction. Nowadays, the unreasonably high prices in NFT auctions are more the result of frenzied speculation. By sparing no effort to raise the price of NFTs, more investors are lured into the market, so as to attract others to accept the offer at a higher price.

3.2 Main Application Fields of NFT

At present, the main application fields of NFT are concentrated in art collection, cryptocurrency, games and intellectual property, which can be divided into Art-NFT, FI-NFT, Game-NFT and IP-NFT in the above four aspects.

Digital copyright protection based on Art-NFT. Based on Art-NFT, it can provide each artwork with unique Internet records supported by blockchain technology. Based on its characteristics of non-mass copying and non-homogeneity, it can help each work to register copyright and better protect copyright through the support of timestamp and smart contract technology. Generally, NFT platforms will clearly restrict the rights of buyers' NFTs through special agreements. When some NFT platforms sell NFT, users are required to purchase a package of copyrights at the same time; some other NFT platforms also require that users be prohibited from selling the purchased NFTs commercially. Since each NFT is unique, buyers need to carefully read the relevant rights restrictions of the platform and specific NFTs when purchasing NFTs, and because NFTs are unique and difficult to copy, the risk of copyright theft will be greatly reduced.

Blockchain finance based on FI-NFT. The application scenario of FI-NFT based blockchain finance is mainly in the aspects of digital asset mortgage and promoting asset liquidity; in terms of digital mortgage of assets, FI-NFT can convert the assets in the real industry into NFT tokens after processing and upload them to the blockchain, making the mortgage process more simplified and the lending rate faster. Based on FI-NFT, by making the assets themselves into tokens on the blockchain, the liquidity of assets can be greatly improved through decentralization. At present, this technology is mainly used in the circulation of collectibles. In the long run, all fields can realize complete asset liquidity in the form of NFT, and promote the digital process of all industries.

Game trading based on Game-NFT. The digital economy in the game advocates the "play-to-earn" model, which can help improve the long-term participation of players,

and help players earn income in the form of in-game tokens / rewards. Take Axie Infinity as an example. Players fight, collect, raise and build a land kingdom for their digital pets in an open universe. Axie infinity is popular because there are various well-designed ways for players to earn income, including daily tasks, PvP and PvE games to earn potions, which can then be traded or cashed in. All these gains can be traded on open exchanges (such as Uniswap and OpenSea) or cashed into legal tender.

3.3 NFT Market Transaction Status

According to the data from CoinGecko, the total market value of global NFT market assets in 2020 was only 317 million US dollars, which soared to 12.725 billion US dollars in the first half of 2021, and the NFT market scale ushered in rapid growth in 2021. According to the report recently released by NonFungible, the global NFT market in the first quarter of 2022 was weaker than that in the fourth quarter of 2021 as a whole, including a 4.60% month on month decrease in transaction volume and a 46.96% month on month decrease in sales volume; the number of buyers and sellers decreased by 30.91% and 15.61% respectively, and the number of active wallets decreased by 25.34%. However, in the first quarter of 2022, the total volume of global NFT transactions increased by 13.25% month on month, which indicates that the total value of the NFT market is still rising, as shown in Table 1.

Although all the indicators of the NFT market indicate that the market is sluggish, there are still some phenomenal NFT projects in the market, such as Moonbirds and Otherdead, which were released earlier. After a period of prosperity, the market often enters a "cooling off period", during which the market pattern will change and investors will be calm and rational. However, after this "cooling off period", the overall quality of NFT projects in the market will improve, which is good for the long-term development of the industry.

3.4 Risk Analysis

Property right risk. The characteristics of NFTs do avoid the risk of intellectual property infringement to a certain extent, but the property rights of virtual goods will not be solved once and for all because of the existence of NFTs. There are still a large

Table 1. NFT global market transactions (Source of the figure: original)

Item	2021 Q4	2022 Q1
Volume of USD traded (Total)	14,531,875,047	16,456,945,150 (+13.25%)
Volume of USD traded (Qualified)	8,251,323,929	7,872,024,436 (-4.60%)
Number of sales	14,040,708	7,447,473 (-46.96%)
Buyers	1,696,613	1,172,235 (-30.91%)
Sellers	967,027	816,027 (-15.61%)
Active wallets	1,948,934	1,455,107 (-25.34%)

number of intellectual property infringement phenomena that can not be ignored in the daily application and transaction of NFTs. In the phenomenon of intellectual property infringement, copyright infringement disputes caused by casting others' works into NFTs without others' permission or forging NFTs with others' signatures and carrying out relevant transactions are common. Nowadays, most NFT transactions occur on mainstream trading platforms, and the platform side should undertake the obligation of pre transaction qualification examination. However, the trading platforms, such as OpenSea, do not have the responsibility to review the qualifications of sellers, product sources or the legitimacy of NFT history. When the trading platform receives the notice from the buyer and believes that the NFT traded may be suspected of infringement, it shall assume the obligation to remove it and remove it from the shelves. In the scam of blockchain transactions, since the funds will be permanently transferred from the buyer to the seller, it is difficult to recover the cheated money, and the buyer may face the embarrassing situation of having nothing left. In addition, the unauthorized use of NFT by the buyer for exhibition and reproduction may also lead to copyright infringement disputes. Since the principle of one-time exhaustion of distribution rights has not really been implemented in China, buyers of NFTs should also pay attention to obtaining the consent of the original copyright owner in advance for the subsequent application of NFT works, so as to avoid the risk of infringement.

Technical risk. An NFT system is a combination technology that consists of blockchain, storage and web application. Security evaluation on the NFT system is challenging since each component may become an attacking interface that makes the whole system really vulnerable against the attacker. Thus, we adopt the STRIDE threat and risk evaluation, which covers all security aspects of a system: authenticity, integrity, non-reputability, availability and access control. We investigate the potential security issues and propose some of the corresponding defence measures to address these issues, as shown in Table 2.

Regulatory risk. At present, China does not have clear legal constraints and regulatory provisions for NFTs. Therefore, NFT transactions have the dilemma that the rights and obligations of both parties cannot be clearly defined and guaranteed, and there are risks such as using new technologies and new applications to engage in illegal and criminal activities. The People's Bank of China clearly stipulates that no organization or individual may illegally engage in token issuance financing activities. Organizations and individuals that have completed token issuance and financing should make arrangements for liquidation, reasonably protect the rights and interests of investors, and properly handle risks. At the same time, any token financing trading platform shall not engage in the exchange business of fiat currency and digital currency, shall not buy or sell or act as a central counterparty to buy and sell digital currency, and shall not provide pricing, information intermediary and other services for digital currency. In order to effectively prevent financial risks caused by NFTs, it is recommended to prohibit financial or payment institutions from carrying out NFT-related services. In traditional finance, my country has issued a series of laws and regulations to regulate anti-money laundering issues, and financial institutions have also introduced corresponding measures to control money laundering. However, in view of the lack of legal and technical supervision means

Table 2. Potential security issues and corresponding solutions of NFT. (Source of the figure: original)

Stride	Security Issues	Solutions
Spoofing	<ul style="list-style-type: none"> • An attacker may exploit authentication vulnerabilities • An attacker may steal a user's private key 	<ul style="list-style-type: none"> • A formal verification on the smart contract. • Using the cold wallet to prevent the private key leakage.
Tampering	<ul style="list-style-type: none"> • The data stored outside the blockchain may be manipulated 	<ul style="list-style-type: none"> • Sending both the original data and hash data to the NFT buyer when trading NFTs.
Repudiation	<ul style="list-style-type: none"> • The hash data may bind with an attacker's address 	<ul style="list-style-type: none"> • Using a multi-signature contract partly.
Information disclosure	<ul style="list-style-type: none"> • An attacker can easily exploit the hash and transaction to link a particular NFT buyer or seller 	<ul style="list-style-type: none"> • Using privacy-preserving smart contracts instead of smart contracts to protect the user's privacy.
Denial of service	<ul style="list-style-type: none"> • The NFT data may become unavailable if the asset is stored outside the blockchain 	<ul style="list-style-type: none"> • Using the hybrid blockchain architecture with weak consensus algorithm.
Elevation of privilege	<ul style="list-style-type: none"> • A poorly designed smart contract may make NFTs lose such properties. 	<ul style="list-style-type: none"> • A formal verification on the smart contracts.

for emerging NFT transactions, in order to ensure my country's financial security, it is recommended that NFT transactions be included in anti-money laundering supervision.

4 Pricing Mechanism

The market transaction and pricing of NFTs are the core research issues faced by NFTs, but there is no relevant research in the literature at present. This section mainly discusses the research problems faced in NFT trading and pricing from the aspects of value evaluation, trading mode and pricing mechanism.

4.1 Factors of NFT Pricing

NFTs are essentially heterogeneous assets with value. The subject matter of NFT is anything that can be expressed in the form of digital files, including collectibles, game assets, virtual worlds, encrypted artworks, cultural tokens, etc., which generally have inseparable, irreplaceable, and unique characteristics. At the same time, the standardized issuance based on the blockchain is additionally endowed with the characteristics of traceability, tradability, accessibility, and generality. The characteristics of these two dimensions together constitute the basis for the value evaluation of NFT. Although the restrictions such as the liquidity on the chain and the uniqueness of tokens make it difficult

for cash flow models and P/E models used in traditional financial asset evaluation to carry out reasonable value evaluation on NFTs, and there is no special NFT value evaluation model at present, researchers can still carry out preliminary analysis on the value of NFTs from different dimensions.

From the perspective of the object dimension of NFT, the value is determined by its own attributes such as creation cost, quality and application, and market factors such as potential demand, liquidity and scarcity. The traditional product pricing model or asset valuation model can be used. From the perspective of NFT technology implementation, its pricing is affected by the security, existence, richness and other factors conferred by blockchain. This paper proposes the influencing factors of NFT pricing from the four dimensions of quality, supply, security and time.

Quality. The quality of NFTs is largely determined by the expression form, creative level, popularity and artistic value of creators. The richer the expression forms, the higher the creative level, the higher the popularity and the higher the artistic value, the higher the quality of NFT will be. And high-quality NFTs can obtain higher value. The quality dimension measures the NFT object itself, independent of its technical reality.

Supply. The total supply and generation speed jointly determine the scarcity of NFT. NFT generate value in circulation, but they are not necessities of life. An increase in supply will reduce the marginal benefits of the demand group, thereby reducing the value of NFT. Researchers need to consider the static supply state of NFTs, but they cannot ignore the dynamic supply change determined by the generation speed. Generally, the faster the generation speed, the higher the total supply of NFT, and the lower their value.

Security. Blockchain can provide infrastructure and hosting platform for NFTs, and the long-standing safe and stable blockchain system is an important guarantee for the realization of the value of NFTs. For example, Ethereum itself is highly decentralized and secure, so NFTs cast on the Ethereum platform have higher value than NFTs cast elsewhere. At the same time, NFTs hosted on the main chain are obviously less risky and expected to last longer than NFTs hosted on the side chain, external chain or even under the chain, so they have higher value.

Time. The subject matter of NFTs is usually cultural and artistic products, which have the characteristics that the value changes with the creation time. Blockchain technology, smart contract protocol and crypto economic mechanism also make the value acquisition of NFTs need to consider the time dimension. Although NFTs are still in a period of rapid development, NFTs cast earlier have shown the characteristics of digital artifacts, and the market's valuation of them is constantly improving.

4.2 Pricing Mechanism

Selling NFTs directly is a relatively common trading mode, because NFTs are essentially commodities with market demand and trading attributes. Under this trading mode, researchers pay attention to which pricing mechanism can maximize the value of NFTs under a specific supply and demand relationship.

Fixed price mechanism. The basis for NFT pricing through the public sales mechanism based on fixed prices is to have certain market liquidity. If few or no customers recognize and are willing to purchase at the fixed price set by the supplier, effective transactions cannot be reached and NFT pricing cannot be realized.

Auction mechanism. Regardless of considering from the supply side or the demand side, the auction mechanism is the pricing mechanism with high acceptance at present. As a heterogeneous commodity, the value of NFTs has certain subjectivity, which varies greatly with the purchase object and use. Under this kind of pricing mechanism, it is also necessary to select or design reasonable auction methods based on market efficiency, transaction objectives and application scenarios.

Spell order mechanism. Splitting NFTs into ERC-20 standard tokens for trading on decentralized or centralized trading platforms is a relatively new NFT pricing mechanism. The overall pricing of NFT is formed by multiple users purchasing any number of tokens through a single order.

Bargaining mechanism. The bargaining mechanism is more suitable for NFTs with high scarcity, low substitutability, and artistic value greater than use value. But in practice, negotiated transactions for specific NFTs are currently very rare. The issue of transaction fees is also involved in the NFT sales process, which has a certain impact on the NFT transaction and pricing. Because NFT developers can charge a certain transaction fee proportionally or by a fixed amount from each transaction. If the transaction fee is set too high, users will abandon the developer market and switch to one-to-one private transactions, which will weaken the liquidity of NFT development transactions to a certain extent, thereby bringing uncertainty and risk to NFT pricing.

4.3 Trading Mode

The productization of NFT financial products is a new transaction model with the development of decentralized finance. NFT is essentially a heterogeneous asset with value, which belongs to a new type of financial asset. There are problems in accessibility, liquidity and utility in the transaction process. The threshold of value discrimination brought by the artistry of NFT and the high price caused by scarcity make the NFT trading market entry barriers and limit accessibility to a certain extent; while the DeFi protocol can reduce the capital and knowledge requirements for users to participate in NFT transactions, and lower the threshold for retail users to enter and exit the NFT market. At the same time, the DeFi protocol will attract more audiences for NFT with its rich and powerful utility, improve the transaction speed of NFT, and enhance the liquidity of NFT. The transaction models of financial productized NFT supported by DeFi protocols mainly include collateral model, crowdfunding model, cooperative model and leasing model.

Collateral model. Similar to traditional artworks, NFTs have dynamically changing value and can be used as collateral to form a two-way lending market. Under the collateral model, the price of NFTs can be determined by means of network crowdsourcing evaluation.

Crowdfunding model. The crowdfunding model refers to the issuance of tokens based on the initial ownership of the NFT that can be split, and the partial ownership of the NFT is sold through crowdfunding. After the NFT is officially generated and traded, the profit is divided according to the proportion of token holdings.

Cooperative model. The cooperative model refers to the cooperation of individual developers to form an organic group to jointly develop, buy and sell NFT, and to share the investment according to the De Fi agreement.

Leasing model. The leasing model refers to leasing an NFT by depositing tokens or collateral that is equal to or in excess of the NFT's market value, and needs to pay for it. This model is more suitable for game NFTs, and users expect higher game income through rental NFTs.

5 Conclusion

NFTs have revolutionized the digital economy by creating scarce crypto assets and accelerating the trend of digital assets, and together with new infrastructure technologies such as blockchain, artificial intelligence and big data, they have accelerated the arrival of the digital society. In the process of NFT driven digital assets, we must solve the problems of insufficient liquidity, market foam and imperfect ecology. With the development of NFT comprehensive trading market and second-hand trading market, the problem of insufficient liquidity caused by the indivisibility of NFTs and the restriction of audience groups can be alleviated to a certain extent. However, in order to realize more efficient and reliable NFT value storage and transfer, we need to carry out more in-depth research and exploration from the aspects of circulation logic and technical means. Due to the lack of reliable value evaluation standards and pricing mechanisms for NFTs, the intervention of speculative capital has led to a blowout development of the NFT market scale, which has caused a foam in the NFT market to a certain extent, which is not conducive to the development of NFTs in the long run. In order to solve this problem, we need to carry out innovative research in the transaction consensus mechanism and value evaluation mechanism of NFTs. Therefore, it is necessary to strengthen research on NFT infrastructure, classification system, application scenarios and value identification to promote the formation of a general and stable NFT ecosystem.

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