

# *Exploring the Application Value and Path of NFT in the Artwork Industry*

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**Abstract:** With the continuous development of blockchain technology and the epidemic situation, the offline art market continues to decline. At the same time, the popularity of the nft market has attracted the attention of many art lovers. For this article, focusing on the combination of nft technology and art, this paper hope to solve various problems in the current market of nft art transactions through this introduction. The article is mainly divided into four parts. The first part describes the overview of blockchain development and the Chinese government's promotion of blockchain technology development. And introduce other literatures that focus on nft technology. The second part describes the current market structure and selects the first industry as the case. The third part uses swot analysis to analyze the feasibility of this technology in the market. The fourth part proposes the concept of 'a blockchain based digital artwork rights confirmation and circulation system' as a solution to the problem based on the above contents.

**Keywords:** NFT, blockchain technology, Opensea, SWOT

## **1. Introduction**

### **1.1. Background of Blockchain and NFT**

The current development of blockchain technology is gradually improved. Blockchain is a new application mode that combines multiple existing computer technologies. It has the characteristics of decentralization and trusted process, which also establishes a trust foundation for the openness and transparency of its information. Therefore, blockchain can build trust at a very low cost in various scenarios involving multiple agents. Now the core of blockchain technology is to establish a decentralized, secure and reliable database [1].

NFT, non fungible token, translated as non homogenous token, is a certified storage unit on the blockchain. It is unique and cannot be separated and replaced. At present, it is mostly the source files of artistic creation in the form of electronic documents, not limited to painting, music, games, etc., and its value is reflected by virtual cryptocurrency.

Blockchain technology does bring new ideas to the art industry, but how to effectively tap the problems of the art trading market and use blockchain to enable it is a major challenge for the future development of the "blockchain+art" trading model.

## 1.2. Precedent of Combination of Blockchain Technology and Artwork

Works of art can be well combined with this technology. A new transaction mode of "blockchain+artwork" has gradually come to the public's attention. Due to its decentralized and tamper proof characteristics, blockchain is very suitable for the artwork trading market. There have been many precedents in China and abroad in applying blockchain technology to the artwork market.

For example, in London, in June 2018, Maecenas publicly auctioned 49% of the shares of the famous painting "14 Small Electric Chairs". Buyers can pay through the special art currency issued by Maecenas, or digital currencies such as Ether and Bitcoin, or track digital certificates through the blockchain. At the same time, some art trading platforms, such as Ant Chain, Kbean, Opensea, also use blockchain technology to achieve NFT art trading and file storage.

## 1.3. Chinese Government's Support for Blockchain Technology

The Chinese government great importance to the development of the blockchain industry.

In October 2018, in China, China Capital Copyright Industry Alliance launched the "BiG Artworks Global Artworks Blockchain Plan" to promote the combination of art trading market and blockchain technology, protect art copyright and transaction security, and promote the development of China's art market [2].

In 2021, more than 60 blockchain related policies have been issued by various ministries and commissions, and blockchain has been written into the "Fourteenth Five Year Plan". For example, "the Fourteenth Five Year Plan for National Economic and Social Development of the People's Republic of China and the Outline of Vision Goals for 2035" mentioned promoting blockchain technology innovation such as smart contracts, consensus algorithms, encryption algorithms, and distributed systems.

## 1.4. Another Literature Cases Focusing on NFT Technology and Its Combination with Artworks

Many other articles also discuss the combination of artworks and nft. I will take Professor Guo Quanzhong's article as an example [3]. In this article, the author believes that the basic features of NFT, such as indivisibility, irreplaceability and uniqueness, can better protect the rights and interests of creators and create a more healthy ecosystem. At present, the application scenarios of NFT are expanding and deepening in various fields. As one of the important infrastructures of the meta universe, NFT can not only solve the problems of identity authentication and right confirmation, but also realize the value transfer between the meta universe. It is also a bridge between the real world and the meta universe to accelerate the arrival and maturity of the meta universe.

## 2. SWOT Analysis

### 2.1. Status Quo in China and Abroad

At present, according to the data of Dappradar, a market research agency, NFT sales will reach 24.9 billion US dollars in 2021, hundreds of times more than the sales of NFT in the previous year. NFT assets will be hyped up in 2021. The hot NFT market has not only attracted many investors, but also attracted some of the world's top brands, including Coca Cola and Gucci. Fig.1 shows the transaction volume of NFT in Opensea. The popularity of the NFT market has increased a lot [4].

In China, there are nearly 1000 digital collection platforms in China, but at the end of last year, the number of platforms was less than 100. It can be seen that the digital collection industry in China has developed rapidly. At the end of 2021, large Chinese Internet enterprises began to create digital

collection platforms. The platform side regularly releases high-quality IP digital collections. The market is in short supply, and the digital collections sold are often sold out in one second [5].

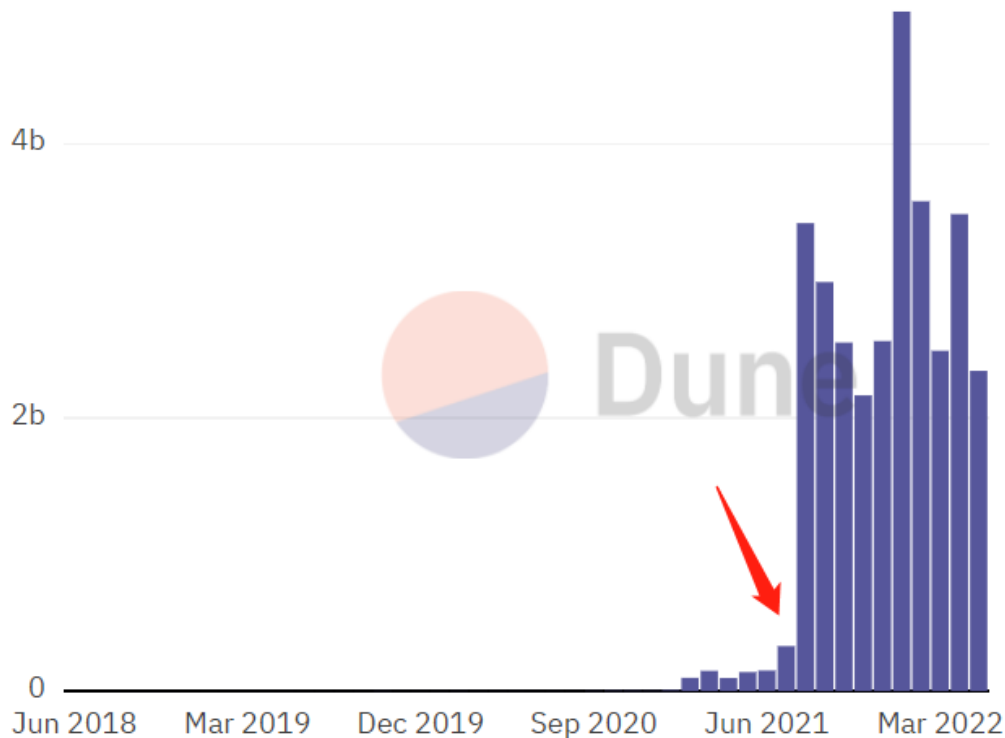


Figure 1: Transaction volume of NFT in OpenSea.

## 2.2. Strengths

(1) Validity of evidence. It ensures that the blockchain uses hash algorithm and value transmission protocol to ensure the consistency and integrity of data and meet the inherent needs of the public. The decentralized value transmission protocol makes the uplink data tamper proof in the actual situation, thus ensuring the authenticity of the data.

(2) Management convenience. Ensuring the flexible use of customized smart contracts in the blockchain can improve the management efficiency and achieve programmatic, automated and refined management. It can not only simplify the management process of file opening, but also save a lot of labor costs.

## 2.3. Weaknesses

(1) The technology is not mature. Decentralization, security and scalability of the promotion cost high block chain cannot be considered at the same time. With the increasing number of nodes and data volume, the operational efficiency of blockchain in high-frequency request scenarios will be affected.

(2) The research is at an early stage. Most institutions are still in the stage of theoretical verification and preliminary exploration. The application cases based on blockchain technology available for reference are extremely limited [6].

## 2.4. Opportunities

(1) The Chinese government attaches importance to it. In October 2019, the Chinese General Secretary emphasized at the 18th collective learning of the Political Bureau of the CPC Central

Committee that "taking blockchain as an important breakthrough for independent innovation of core technology" and "accelerating the innovation and development of blockchain technology and industry". The emerging policies show China's support for this technology.

(2) Potential demand increases. The implementation of the Regulations on the Disclosure of Government Information, which has broad market prospects, has made citizens increasingly aware of the right to know and eager to obtain more information and participate in public decision-making. The information sharing features of the blockchain are in line with citizens' needs for information openness, and are also in line with the development direction of openness and transparency of the government agencies. With the new blockchain technology, the government and the market can stimulate their unlimited potential and effectively respond to the information needs of the public.

## **2.5. Threats**

(1) Lack of corresponding regulations and standards. In the field of blockchain, the Ministry of Industry and Information Technology has actively organized the development of standardization. However, most of the existing standards are concentrated on the basic standards. The relevant research on process standards and method standards with important guiding significance has not been carried out yet. The progress of standard development is far behind the requirements of industrial development, which restricts the development of blockchain applications [7].

(2) Trust concept and usage habits are difficult to change. The public has been accustomed to the original working mode, and is naturally cautious about new things. The promotion and operation of blockchain still faces many challenges.

(3) Nft is easy to become a money laundering tool. NFT is often purchased with virtual currency. As virtual currency has the characteristics of disintermediation, border removal, non face-to-face, anonymity, and transaction rapidity, it is difficult to identify the source of virtual currency capital injection, while virtual currency transactions do not require the real name of the trader, and its global liquidity is large, and there are various cross-border and transnational transactions. Therefore, as the object of virtual currency transactions, NFT is easy to become a money laundering tool.

## **3. The Case of Opensea**

In recent years, many scholars have actively explored the application of blockchain in various fields. "Blockchain+artwork" is one of them. At present, many blockchain plus artwork certification projects have sprung up and landed. Due to the short time of acceptance and development in China, there are few mature platforms in China. Compared with foreign countries, foreign achievements in this area are more prominent and the system and market development are more mature [8].

The following one is a successful case of art transaction using blockchain in foreign countries.

### **3.1. Opensea is the World's Largest NFT Trading Platform**

Opensea has developed into an undisputed leader in the NFT market, with a market share of more than 97% and a turnover of 12 times that of its largest competitor. Since its launch, its historical sales have exceeded \$10 billion.

### **3.2. Opensea Products**

The main product of opensea is nft. All these successes cannot be separated from the services provided by the platform. The superiority of the product are mainly reflected in the convenient list, global products and powerful search system.

### 3.3. Types of Opensea Products

Types: art, music, domain name, virtual world, transaction card, collection, sports and functional assets. Fig.2 shows Types of nft products.

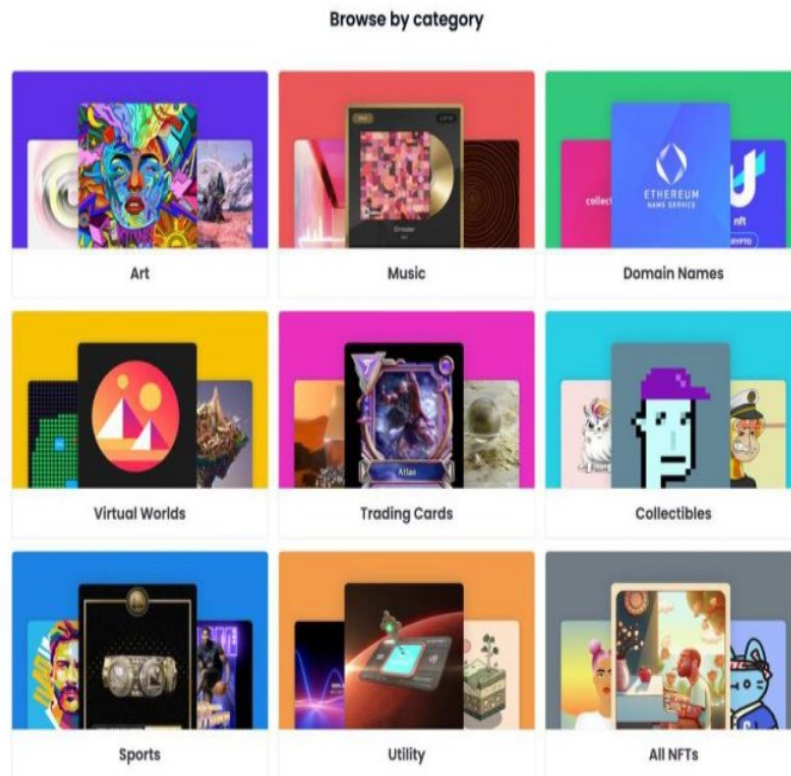


Figure 2: Types of nft products.

### 3.4. Advantages of Opensea

**Low entry threshold:** launch NFT on Opensea, whether images or songs, with only a few clicks. Alex Gedevani of Delphi Digital, an encryption research institute, described it as one of the decisive factors behind Opensea's market dominance.

Opensea emphasizes to become a licensing free market for all users who love nft. Due to the lower entry threshold compared with other platforms, more creators of nft can register and upload their own works. This approach expands the supply of creators in order to attract more users and capital in the primary and the secondary markets.

The number of huge collections and collectibles that can be purchased immediately: there are more than 1 million collections on the platform and more than 34 million personal NFTs available for purchase, so Opensea has high market liquidity that other websites do not have.

**Strong screening mechanism:** Opensea has made a very detailed classification of the products on the website. The value of each essential feature is different. Opensea excels in capturing, cataloging, and allowing users to search for this information. Through opensea's filtering and search tools, users can quickly find their favorite products. The prominent filtering elements include fur color, whether apes are eating pizza, and whether there are luminous eyes. Fig.3 shows the Filtering mechanism of Opensea.

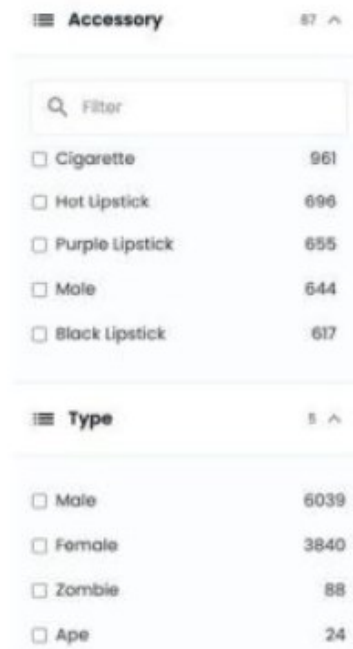


Figure 3: Filtering mechanism of Opensea.

### 3.5. Development Status of Opensea

2021 is the year of NFT market explosion. According to the data of Dune Analytics, the market share has also soared from 61% in July 2021 to 95% at the end of December 2021, ranking first, while the total transaction volume and user volume of the second SuperRay are only 1/24 and 1/6 of Opensea respectively.

In 2022, Opensea continues to rise. On January 9, the daily trading volume exceeded 260 million dollars, the peak in more than three months. As of January 10, the cumulative trading volume of Opensea in January had reached nearly US \$2 billion, about 61% of that in December last year. On January 4, Opensea announced that it had completed round C financing of \$300 million with a post investment valuation of \$13.3 billion, and the valuation had increased six times since the previous round of round B financing of \$100 million.

### 3.6. Opensea's Competitors

Because opensea is still in the blue ocean market. This leaves room for various competitors, including centralized NFT market, decentralized market, vertical market and cryptocurrency exchange. Fig.4 shows the Opensea Competitor Map.



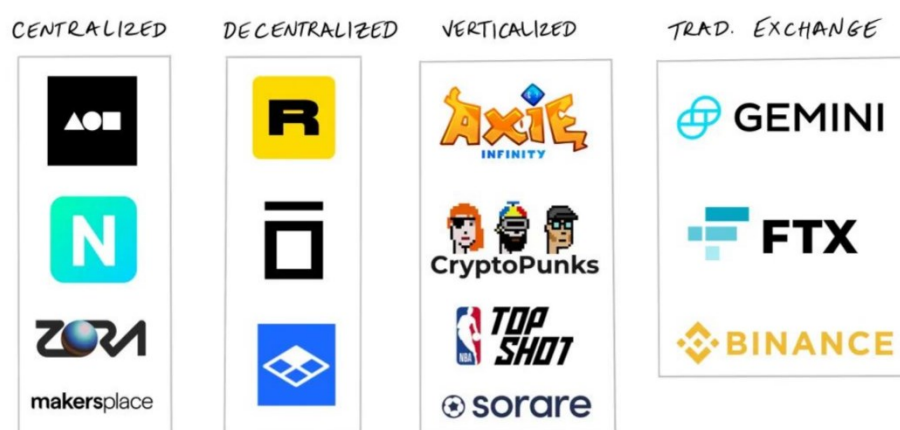


Figure 4: Opensea competitor map.

### 3.7. Current Problems Faced by Opensea

(1) This company which owns a huge market is still a young company with dozens of employees and has developed for only a few years. From the perspective of enterprises, its maturity and integrity cannot be compared with that of Internet companies of the same size.

(2) The popularity and satisfaction of Opensea platform among target users are not ideal. Users are dissatisfied with the company's costs, the high gas fees incurred from using Ethereum blockchain, and the lack of decentralized functions such as tokens.

(3) The positioning of NFT itself is ambiguous. If the U.S. regulatory authority determines that NFT is a security, Opensea's business model will be greatly affected, because the entire platform will be forced to comply with new laws and regulations which will be more strict. Therefore, opensea must be prepared for what may happen in the future [9].

## 4. A Blockchain Based Digital Artwork Rights Confirmation and Circulation System

The status of artwork in the era of highly developed economy and society is constantly improving. With the continuous improvement of people's cognitive ability of artwork and the continuous change of art appreciation methods, there is an unprecedented vacancy in the artwork market. The current problems are mainly the following:

- (1) The network anti-counterfeiting technology is not perfect;
- (2) The existing blockchain based digital artwork right confirmation and circulation system for artworks has problems of centralization, easy tampering and traceability;
- (3) It is difficult to achieve effective and rapid offline transactions under the epidemic environment;
- (4) The offline transaction costs are too high and the information circulation is poor.

The above problems have also led to the inability of various art trading and storage platforms in the society to directly address the pain points of the industry and accurately address and meet consumer needs.

Therefore, this paper puts forward the concept of digital artwork right confirmation and circulation system based on blockchain. As a new application mode that uses computer technologies such as distributed data storage, point-to-point transmission, consensus mechanism, encryption algorithm, etc., blockchain has the characteristics of decentralization, tamper resistance, traceability, and information change traces, In addition to effectively responding to the high requirements of product identification, transaction and information storage, the blockchain based digital artwork right

confirmation and circulation system is feasible in terms of technology, economy and management, and has great social and economic significance.

The core concept of blockchain based digital artwork right confirmation and circulation system design is to realize a management system and platform integrating product identification, transaction and information storage management. Based on the problems existing in the existing art trading platforms and methods in China, the platform aimed at meeting consumer needs and focusing on security and identification functions was established through innovative ideas and initiatives [10].

As for the information storage methods of offline artworks currently available, most of them store information by adding QR codes to real paper artworks. The QR codes only contain the painting information, which only includes the address and ID information of the dynamic link database, and it is difficult to meet the growing consumer demand. QR code has the risk of personal information disclosure. Without more perfect encryption measures, it is difficult to maintain the security of the information in the QR code. If you want to obtain data, you must meet the two conditions of having a QR code and a decoding device at the same time. You can only obtain data under specific conditions. It is difficult to complete the operation when the QR code is damaged or lost.

## 5. Conclusion

To sum up, a blockchain based digital artwork rights confirmation and circulation system that is highly reliable, easy to preserve, easy to falsify, and also cares about privacy protection has become an inevitable demand. These users' basic performance requirements, which is the source of the so-called "blockchain based digital artwork rights confirmation and circulation system". Compared with the current NFT trading platform, such as OpenSea, which was established in 2017, as the largest NFT trading market, its trading products include encryption art, virtual world assets, cards, digital collections, domain names, etc. The scale of OpenSea is the largest in terms of the number of collections and creators. However, OpenSea's review of NFT uploaders and their works is not strict, or even loose. Without identity authentication, anyone can publish various forms of NFT works on the platform, which also leads to the existence of a large number of low value junk works on the platform. At this stage, the NFT market has a false boom. Because NFT works at the initial stage are rare and of epochal significance, they themselves have a certain added value. However, scarcity often makes items have financial attributes, causing people to "hype". Therefore, the value judgment of NFT works will gradually become rational with the improvement of technology. NFT works with low creativity will gradually reduce their value. The value recognition of virtual works may gradually decline, while real works of art that are more widely recognized in terms of value have not yet fully integrated into the current NFT market.

Easy preservation is a highly reliable extension requirement. When the system carries a large amount of user information, there will be a demand for the storage system to realize information query, and this system can fully meet this requirement.

Easy falsification is the core requirement of the system. Blockchain technology has the characteristics of decentralization, traceability, and information change traces, which can effectively solve the problem, ensure the authenticity and uniqueness of the authentication certificate, ensure the ownership of online works, and achieve a high degree of anti-counterfeiting and preservation.

The privacy protection is also one of the major problems in the existing blockchain based digital art right confirmation and circulation systems at home and abroad. In order to ensure the data security and privacy protection of users, third-party authentication services are provided off the chain and the original data information of users and works is stored, while verification information is stored on the chain. Nodes in the chain participate in the verification to eliminate the possibility of fraud to the maximum extent and improve privacy protection and data information management.



Therefore, the blockchain based digital artwork rights confirmation and circulation system has become an important method to solve the issues of artwork trading and information management.

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