

A Study of the Development Status and Purchase Intention Factors of Metaverse NFT Collectibles

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ABSTRACT

During the COVID-19 epidemic, museums and visitors are moving from offline to online, the age of metadata is upon us, global digitization is increasing, blockchain technology is maturing, the NFT trading market is active, and collectibles are the most popular and fastest-growing category. China is at an early stage but developing rapidly. In the study, first, the differences between NFT collectibles in China and other countries are analyzed through literature and cases, and the platform of NFT collectibles in China is analyzed; then, the dimensions of the perceived value of NFT collectibles are summarized and obtained through user interviews; finally, a theoretical framework based on multidimensional perceived value on users' purchase intention is established and validated through expert interviews. The study facilitates the analysis of Chinese NFT collectibles, thus generalizing the benefits of multidimensional perceived value, which is essential for future development.

Keywords: Metaverse, Perceived value, Chinese NFT collectibles, Purchase intention

INTRODUCTION

In the context of the metaverse, NFT, as a Non-fungible token, became the Collins Dictionary word of the year (Alison Flood and Flood, 2021). Compared to traditional collectibles, NFT collectibles drive digital art closer to the metaverse world, relying on blockchain technology, NFT participates in the integration of the metaverse and the real world.

With the birth of overseas NFT sales platforms such as SuperRare and Opensea, NFT has brought a new boom to the art market as well, accelerating the rapid development of the trading market (Ahn, 2022). Of these, NFT collectibles are the most popular and fastest-growing category. March 11, 2021 - Digital artist Beeple's NFT artwork "Everydays: The First 5000 days" sells for \$69.3 million at Christie's (Kastrenakes, 2021), Bitcoin's digital currency cashed in at \$53 million, making it the most expensive NFT art collectible ever and signaling the official entry of traditional collectibles into the NFT trade. Just as it is possible to view a physical collectible in a museum without owning it, Internet users can view the artwork.

Most people in China do not have access to overseas markets, but NFT's entry into China has resulted in a digital collectible with unique characteristics in China due to the uniqueness of the Chinese system and related background. Why do users buy NFT collectibles? What are the dimensions of the perceived value of NFT collectibles by users? What is the relationship between the latitude of perceived value and purchase intention? To answer these questions, this study proposes a theoretical framework of perceived value applicable to NFT collectibles based on previous theoretical studies and user research.

Find the factors that have an impact on the user's purchase of NFT collectibles, and these perceived values will determine the intention to buy and the intention to keep buying. The NFT collectibles mentioned in this study refer specifically to digital collectibles with Chinese characterization.

CURRENT STATUS OF NFT COLLECTIBLES AND DEVELOPMENT IN CHINA

NFT(Non-Fungible Token)

NFT refers to Non-fungible token, which is a special form of blockchain-based token with uniqueness, non-replaceability, authenticity, scarcity and collectability (Valeonti et al., 2021), traceability, resealability, verifiability and non-comparability. The NonFungible (nonfungible.com) data site divides NFT into five major categories: art, collectibles, games, metaverse and utilities. More and more scholars are studying NFT for a wide range of applications in different fields. The emergence of the NFT collectibles allows the boundaries of art collecting to be extended to the metaverse world, generating an ecosystem that combines the universe and art (Lee Minha, 2022; Nobanee and Ellili, 2022), No longer limited to the physical world. As a result, digital art collecting has become more plebeian, and more people are able to become collectors of NFT collectibles with limited funds.

Digital collectibles is a form of application of NFT in the Chinese market, is the exploration of NFT in China's localized characteristics, and compliance with the volume of cash, (Wang, Sun and Guo, 2022), China's NFT collectibles have removed the financial attributes and added digital and collectible attributes (Guo and Xiao, 2022). Comparing overseas NFT, there are great differences from payment methods, presentation and transaction methods (see Table 1). Overseas trading through virtual coins, China only supports RMB trading; overseas use Ether, China uses company chain or alliance chain. The products displayed on the sales goods platform are mainly cultural and creative, while NFT in other countries is relatively comprehensive, including pictures, audio, video, photography and other various forms will be involved.

China NFT Collectibles and Development Status

According to China's Digital Collectibles Application Reference, the number of NFT collectibles platforms in China has exceeded 700 as of early July 2022 (XinHuaWang, 2022). It is expected that in 2026, the market size will reach

Table 1. Similarities and differences between China NFT collectibles and NFT.






	China NFT Collectibles	Other Country NFT
Features	Unique serial number, non-temperable, non-replaceable	
Type	Artwork, music, video, 3D, film video, games	
Groups	Young people of Generation Z	
Value Proposition	Artistic value, collection value, ornamental value	Speculative value, digital art value, collection value
Platform	Chinese company chains and alliance	Decentralized Etherchain
Distribution	private chain issuance, unable to achieve cross-platform flow	Public Chain Distribution
Type of sale	Private Chain	Public chain
	Distribution/PGC/Branding, Cultural Creation, Museums, Famous IPs, Animation	distribution/UGC/individual original works
Pricing Method	10-100RMB, generally at a lower price	Prices vary very widely and are generally higher
Payment methods	RMB	Virtual currencies (Bitcoin, Ethereum)
Trading Method	China strictly controls the secondary trading of digital collectibles, and most trading platforms do not support secondary trading	A high degree of freedom, significant market liquidity, fully liberalized secondary market
Purchase Method	Purchase must be a real name, certain age limit	Anonymous account trading
Distribution content requirements	Content must be reviewed before it can be published	Publish without review, any subject matter
User Rights	Users only have a viewing, and learning rights, a few can be transferred, can not be secondary transactions, the purchase can not get ownership	Users can trade and transfer their NFT goods for commercial purposes and purchase to gain ownership.

30 billion, in the quiet rise of NFT collectibles, both Internet majors and various traditional enterprises have issued various types of NFT collectibles, providing an opportunity for the flourishing of NFT collectibles in China, the following are the top ranked Chinese NFT collectibles sales platform (see Table 2).

NFT China, a digital integrated trading platform under Bigverse, provides NFT digital assets on the chain, promotion, trading and other services, China's first decentralized storage solution trading platform, NFT China has thousands of artists in residence, hundreds of artists with the platform has launched a deep cooperation, so that the platform brings together many high-quality works with investment value. It is the largest NFT collectibles trading platform in China. NFT China is the only trading platform in China that uses the public chain of Ether, and the platform is more flexible and suitable for public artists to upload their works.

Huan He, It is Tencent's NFT trading software. The digital commodities on the platform are issued based on the blockchain digital collection technology protocol, each digital commodity has a unique identification on the chain in the blockchain and cannot be tampered with, and the purchaser can only use it for collection after purchasing the NFT collectibles and cannot trade it.

Table 2. China Digital Collectibles Representative Platform.

Platform name	Logo	Launch Time	Blockchain	Platform Background	Sales content
NFT China		2021.05	Ethernet public chain	Hangzhou Yuan and Zu State Capital Holdings	Artwork
Huan He		2021.08	To Trust Chain (Alliance Chain)	Tencent	Media and Cultural Content
Xiao Hongshu R-Space		2021.11	To Trust Chain (Alliance Chain)	Little Red Book	IP products, virtual apparel, jewelry etc.
Jing Tan		2021.12	Antchain (Alliance Chain)	Alibaba	Cultural Content, Public Welfare, Sports etc.
Ling Xi		2021.12	Zhi Zhen Chain	Jingdong	IP Art Products

As the first online NFT digital art app in China, it has more advantages by cooperating with many companies.

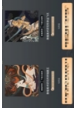








Xiao Hongshu R-Space, as a space for displaying R-digital collections in the personal center of Xiaohongshu, there are words containing physical goods on some product pages. That is to say, users can have online digital collectibles, but also offline to receive the same style of physical goods, compared to other platforms, the diverse form has a richer playability.

Jing tan, users can support the digital collectibles and artists they love through Jing tan. When users own digital collectibles powered by Antchain, they can show and give them to their friends, but only if they have purchased and owned the digital collectibles for 180 days.

Ling Xi, the digital collectibles trading platform launched by Jingdong, digital collectibles are somewhat like a gift you get by chance by shopping in a shopping mall, which is more unique compared to other platforms.

From the above sales platform can be seen, NFT is the key to the landing of the metaverse, and China NFT collectibles reflect the cultural digital transformation, which can promote the collection, transmission and use of culture in a new form on the basis of retaining the original culture, the following are all the above China NFT collectibles sales platform selling collectibles (see Table 3). This benefits the visibility and reputation of traditional museums, expands the circle of fans, attracts a wider audience for the museum collections and makes them more accessible, while promoting the generation and development of cultural and other multidimensional values.

Table 3. Collectibles sold on the China NFT collectibles sales platform.

Name	Launch	Issuing platform	Price (RMB)	Quantity	Sources	Case Pictures
Dunhuang flying days, nine color deer payment	Jun 23, 2021	Jing Tan	9.9	16000	Dunhuang Mythology	
Gu Shu Jin Sha	Nov 18, 2021	Jing Tan	Free	20000	Chengdu Jinsha Site Museum	
Forbidden Lucid Glory Series	Oct 29, 2021	Jing Tan	9.9	40000	The Forbidden City	
Dunhuang Cultural Creations	June 16, 2022	Huan He	128	24000	Dunhuang Mythology	
Forty Views of Yuanmingyuan	June 29, 2022	Huan He	88	24240	Yuanmingyuan	
The Sword of the King of Yue	Oct 29, 2022	Jing Tan	19.9	10000	Hubei Museum	
Bronze servants with horses	November 17, 2022	Jing Tan	25	10000	Hunan Museum	
Singing figurines	July 14, 2022	Jing Tan	25	10000	Sichuan Museum	
Impressions of Twenty-four Poems-Jihua	Oct 25, 2022	Jing Tan	18	20000	Traditional Chinese National Painting	

DIMENSION OF USER PERCEIVED VALUE

The dimensional study of perceived price enables researchers to distinguish between primary and secondary values and to identify correlations. According to the different dimensions of user value, companies can adopt different innovative development strategies to meet the specific needs of users in terms of product value. Because the specific analysis of the system logic will face a variety of possibilities, there are many research cases under this logic, each with its own focus, and the exact number of dimensions depends on the specific content of the study (Zeithaml, 1988). Later, as the research progressed, more and more scholars introduced the concept of perceived value into different studies, and many scholars discussed and researched the user's perceived value into different dimensions (see Table 4), included are ancient villages, leisure food, green products, community and cultural products.

The study proposes specific dimensions of perceived value based on Chinese NFT collectibles, based on a literature review and the results of in-depth interviews. In-depth interviews were conducted in China between December 2022 and January 2023 with eight users who purchased Chinese NFT collectibles. The interviews gathered information on the characteristics of Chinese NFT collectibles, reasons for purchase, and perceptions that influence purchase intentions.

It has been proven that Chinese NFT collectibles possess the three values of price value, social value and emotional value as studied by previous authors. Different prices will influence users' purchases, and only when the same price point is available will users consider other values of the product. Users can own and enjoy an excellent art collectible, and due to the scarcity of the limited edition, can gain the need for socialization and recognition. As the users of NFT collectibles in China are now mostly Generation Z, they are more inclined to emotional and spiritual needs in consumption, emotional value is more important to them, and most of them communicate online, which is also conducive to the spread and development of NFT collectibles. With the

Table 4. The different dimensions perceived value obtained by previous authors.

Authors(Year)	FV	SV	EmV	CV	SiV	PV	GV	EcV	IV	EdV	ExV
Sheth, Newman, and Gross (1991)	•	•	•	•	•						
Sinha and De Sarbo (1998)						•					
Sweeney et al. (2001)	•	•	•			•					
Petrick (2002)	•		•		•	•					
Wang Xiqiu (2005)	•		•					•			
Yang Xiaoyan, Zhou Yijin (2006)	•	•	•			•					
Meng Qingliang, Han Yuqi (2013)		•	•			•					
Yonggui Wang (2020)	•	•	•				•				
Shu Shujin and Shao Jun (2021)	•	•	•			•			•	•	•

*FV:Functional Value, SV:Social Value, EmV:Emotional Value, CV:Cognitive Value, SiV:Situational Value, PV:Price Value, GV:Green Value, EcV:Economic Value, IV:Innovation Value, EdV:Educational Value, EV:Experience Value

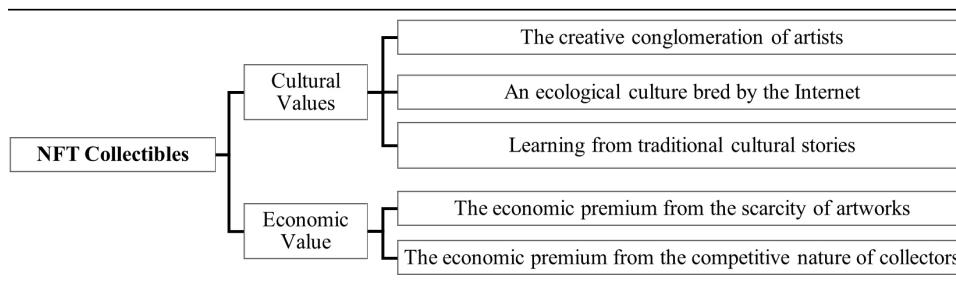
help of blockchain technology to make cultural artworks into unique NFT collectibles, and through itself to spread the connotation and value of complete Chinese culture and art, allowing users to better understand China's cultural history and enhance cultural confidence and cultural self-awareness.

Cultural value, from the cultural point of view, art collectibles are the crystallization of the results of the artist's intellectual work, which unites the artist's style and cultural heritage, and according to previous studies (Throsby, D. 2001), Works in the art category have economic and cultural value. Therefore not everything can be an NFT collectibles. The following are the dimensions of cultural and economic value regarding Chinese NFT collectibles (see Table 5). The heritage of traditional culture is the focus of China's NFT collectibles, which plays an important role in promoting traditional culture, helping to rejuvenate it and helping to pass it on.

Collection value, NFT collectibles themselves come with a collection value, a number of museums launched a digital collectibles "sold out in seconds" phenomenon, close the distance between the user and the museum, so that the general public can be close to own museum collectibles. As NFT collectibles are on sale in limited quantities, more attractive to users to buy and collect, and NFT collectibles do not exist in the physical works, only in the digital world, do not have to worry about physical damage and loss with the passage of time, and NFT collectibles after the application of encryption technology can generate digital signatures that can not be copied, with a unique digital certificate of ownership.

Innovative value, as most NFT collectibles in China are secondary creations of museums or cultural IP, and the designer's creativity again is more conducive to the user's willingness to buy, and the cultural value also remains reflected in the artist's creativity itself. It also requires the artist to transform the creative process, and previous studies have confirmed that the value of innovation plays a positive impact on the purchase of the collectibles (Li et al., 2021). At present, the originality of Chinese NFT collectibles is still relatively lacking, of which the main reason is the rush for quick success and imitation. Secondary creation relies on the innovative ability of designers, and requires the creativity of designers on the basis of culture, to reveal the original potential that Chinese NFT collectibles design may contain. The designer's unique style of personal creation is incorporated into the design to give it a different artistic style.

Table 5. The cultural and economic value dimensions of NFT collectibles.



Experience value, NFT collectibles are not physical collectibles, unlike traditional collectibles, they are products in the virtual world of the metaverse that require interactive experiences with users through electronic devices, just like CryptoPunks that launched in June 2017 by Larva Labs Studios, the project features profile pictures of cartoon apes that are generated by an algorithmic process. Available NFT collections styles are 2D graphics, 3D graphics, 2D dynamic graphics and 3D dynamic graphics (Yoon and Chung, 2022), different styles combined with AR and VR technology to give users a different experience, a variety of ways to play the experience, more immersive.

The study therefore proposes seven dimensions of perceived value of NFT collectibles in China, namely price, social, emotional, innovative, experiential, cultural and collection value. While NFT is developing rapidly, it needs to pay attention to its value discovery and enhancement to avoid the situation that large platforms are spiked and small platforms are stagnant.

MODEL BUILDING AND VERIFICATION

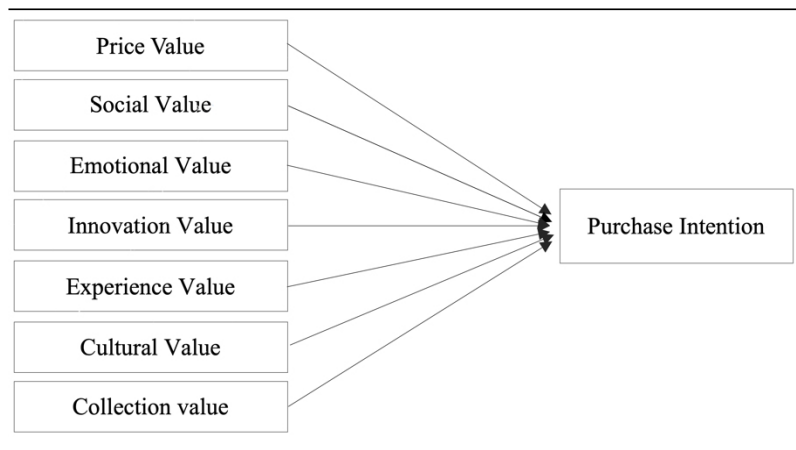
China NFT Collectibles Perception Model

Previous studies in the literature have shown that different dimensions of users' perceived value lead to purchase intentions (Chen and Chen, 2010; Wang, 2010), The results of the in-depth interviews confirmed that price, social, emotional, innovative, experiential, cultural, and collection values of Chinese NFT collectibles affect users' purchase intentions, with the previous three dimensions being those possessed by ordinary collectibles and the latter four dimensions being those of Chinese NFT collectibles. This leads to the theoretical model of the study (see Table 6).

Verification Model

After the research model summarized from the literature review, in-depth interviews and case studies, one of the popular Chinese NFT collectibles was selected as a case study for analysis and evaluation. Experts in the field

Table 6. Research model.



were then invited to evaluate whether the case had these dimensions. The case in question is the digital music collectible “Star Music Search” (see Figure 1), which is available on Tmall in China. Limited to 1,000 copies, priced at 99rmb, the work is inspired by the relics of the Three Star Pile and is presented in 3D + AR + dynamic + music. The second creation amplifies the exaggerated deformed shape of the original Three Stars Pile relics, strengthens the five senses, incorporates trendy clothing and mechanical elements, and conforms to the modern thinking.

Users can interact with the virtual objects through screen manipulation, moving with hand movements, complete with the interactive and multi-sensory nature of the collection. The simultaneous playing of a popular song - Long Time No See - sung by the Three Stars Band also provides a sense of immersion and stimulates the imagination of the audience.

Four experts were invited to evaluate the perceived value in this case, they are from the designers and scholars in the field, the evaluation criteria is the seven dimensions of perceived value, using a five-level Likert scale for scoring, the results are shown in the table (see Table 7). All seven dimensions received high scores of 4 or more, thus providing good evidence that the Chinese NFT collectibles now possess the perceived value of these seven dimensions.



Figure 1: China NFT Collectibles “Star Music Tracing”.

Table 7. Four expert ratings.

	A	B		C		D	
	NFT Designer (3 years)	Illustration Designers (5 years)		Visual Designer (College teacher)		Game Designer (4 years)	
	Price Value	Social Value	Emotional Value	Innovation Value	Experience Value	Cultural Value	Collection Value
A	4	5	4	5	5	4	5
B	4	4	5	5	5	5	5
C	3	3	4	5	5	5	4
D	5	4	5	5	5	5	3
Average	4	4	4.5	5	5	4.75	4.25

CONCLUSION

Research Conclusions and Insights

At present, the Chinese government is actively building the infrastructure of the virtual metaverse world, and has also issued relevant policies to support it. NFT collectibles play an important role as a medium for this, but because China's economic system and social system are different from overseas. Therefore there is a need to summarize the current situation of Chinese NFT collectibles based on comparing them with other countries to properly view the value of Chinese NFT collectibles. Thus, different dimensions of perceived value are also generated, and seven dimensions of perceived value of Chinese NFT collectibles are obtained by summarizing the literature review and user interviews. Finally, typical cases were found, and then expert evaluations were conducted to validate the perceived value theoretical model. Based on this research, companies, teams or individuals can adopt practical strategies and methods to improve the seven perceived dimensions of price, social, emotional, innovative, experiential, cultural and collectible value of Chinese NFT collectibles, and develop and use more designs of these dimensions to enhance users' willingness to buy.

The phenomenon of oversupply of NFT collectibles sold by large Chinese companies and the lagging of NFT collectibles by SMEs is essentially a failure to reflect the seven dimensions of perceived value mentioned above, and they can enhance the value of other dimensions at the same price through the following.

First, when selecting the subject matter, not only the production of museum collectibles model drawings, but also mythological stories, fables and cultural writings can be selected to refine the cultural IP subject matter for creation. Secondly, the colors, patterns and shapes of the collectibles can be refined, and on the basis of objectivity, the designer's subjective ability can be given full play to display different styles and creative works. Third, it is not limited to 2D works, but combines 3D, dynamic, AR and VR in various interactive forms to immerse users.

Research Limitations and Future Directions

The results are positive, but there are limitations to note and point to potential future research topics, due to time, number and space limitations, the model could only be validated through expert interviews, and with a larger experimental population (questionnaire), the perceptions of different ages, genders and occupations on Chinese NFT collectibles could be more diverse. Therefore, in the future research focuses on how user perceived values affect Chinese NFT collectibles and those user perceived values that have a positive impact on Chinese NFT collectibles purchases.

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