

# A Study on Consumer Perception of NFT based on Brand Concept Map

Jinbo Zhang and Jing Li\*

## ABSTRACT

As the digital economy and meta-universe continue to expand, there is a growing demand for research on Digital Collection. For companies seeking to achieve rapid growth and advance digital consumption, it is crucial to have a comprehensive understanding of how consumers perceive Digital Collection in today's digital age. Based on the introduction of brand concept maps, this study draws a map of the consumer perception structure of Digital Collection with Chinese consumers as the research object and provides corresponding suggestions for enterprises to carry out marketing activities using Digital Collection, which is guiding significance for the healthy and green development of the Digital Collection market development and promotion.

**Keywords:** Brand Concept Map, Consumer Cognitive Structure, Digital Collection, NFT.

Submitted: August 28, 2023

Published: October 12, 2023

 10.24018/ejcompute.2023.3.4.118

Tianjin University of Technology and Education, China.

\*Corresponding Author:  
e-mail: lijingjing@live.com

## 1. INTRODUCTION

With the rapid development of the digital economy, the metaverse has become a hot topic of concern. As a virtual world constructed by digital technology and artificial intelligence, the metaverse can simulate various situations and experiences in the real world, bringing users a richer and more realistic virtual experience. In this digital world, Digital Collection, as an emerging digital asset, has also begun to attract more and more attention. The scarcity and uniqueness of Digital Collections give them a unique value. Today, China's digital economy has great potential for development, while the real economy also needs digital transformation, Digital Collection is an entry point for the development of the digital economy and the real economy has great potential.

Scholars across various fields are actively researching and exploring Digital Collections. Wang *et al.* [1] conducted a thorough analysis of NFT's system composition and publishing process from a technological perspective and identified opportunities in gaming, virtual activities, digital property rights, and meta-universes. They also pointed out challenges related to usability, security, privacy, government management, and extensibility, while offering solutions to tackle them. Bao *et al.* [2] provided a comprehensive review of NFT research in the financial domain, highlighting the focus on asset pricing and

proposing future research directions in areas such as token economics, risk regulation, and unresolved issues in asset pricing. Meanwhile, Hofstetter *et al.* [3] introduced the concept of "crypto-marketing," which utilizes blockchain technology to design, price, promote, and sell both digital and non-digital products. Colicev (2023) explored how NFTs can enhance brand value and be leveraged as standalone assets in marketing practices [4].

Although existing research has explored the application of digital collection in depth within different domains, how digital collections are understood and perceived from a consumer perspective is still a pressing issue to be investigated. Understanding consumers' perceptions and attitudes towards digital collection is important for understanding and promoting the development of the digital collection market. Given this, this study adopts the method of brand concept map to draw the digital collection consumer cognition map, to explore consumers' key associations and evaluation factors for the digital collection, and to clarify consumers' attitudes and behavioural intentions toward Digital Collection, to provide important theoretical and practical guidance for digital collection practitioners and market regulators to formulate scientific management decisions, and to push forward the healthy and green development of China's digital collection market.



## 2. CONCEPTION

### 2.1. Digital Collections

Metaverse is a popular scenario in the Web3 environment, and NFT is one of the applications in the metaverse. NFT is different from traditional digital commodities in that NFT records music, video, text, etc. on a non-tamperable ledger through blockchain technology and ensures their uniqueness and true ownership [1]. In China, NFT is also called Digital Collections, and the only difference with NFT is that Digital Collections does not have the financial attributes of NFT. Digital collections have already had a huge impact within the fields of music, games, digital copyright and so on. It provides a new way of value transfer and ownership transaction mode for the digital era and gives a new meaning to digitized culture and artworks.

### 2.2. Brand Concept Map

Concept mapping as a measurement technique has been applied in the physical sciences for many years, aiming to capture individuals' perceptions of scientific and technical concepts and their interrelationships. Based on this approach, John *et al.* [5] proposed brand concept mapping, a technique for constructing brand concept maps, which is mainly used to study consumers' perceptions and association networks of brands. Through interviews with respondents, consumers are asked to associate a specific set of "words" with each other and then to draw an Individual Map of the associations associated with the words. The BCM maps drawn by all the interviewees were summarized to create a consumer map of the group's perceptions of the word, based on which consumers' perceptions of a particular word can be obtained. Based on the Consumers Map, we can obtain consumers' perceptions of a particular word and its formation process.

Numerous scholars have delved into the use of BCM in various fields such as city brand management [6], tourism market analysis [7], service quality perception [8], and consumer brand perception [9]. These studies offer valuable perspectives on pertinent topics and facilitate a more profound comprehension of branding matters among scholars.

With a measurement technique that can reveal consumers' associative network mapping of an important brand, BCM can visualize how consumers consider a brand. Mapping consumers' BCM cognitive structure is divided into the following 3 main steps: (1) Elicitation stage. This stage is mainly through one-on-one in-depth interviews or questionnaires with the respondents to obtain the relevant associations of the respondents about the research object. (2) Personal BCM mapping stage. Respondents map the associations from the interview stage into a network map of how they perceive the research object and determine the strength of the associations between associations in the research map. (3) Aggregation phase. Core associative words are identified and the associative relationships between individual core associative words and the strength of the associations are analyzed, and the BCM map of the group is drawn by the researcher.

## 3. RESEARCH DESIGN AND PROCESS

### 3.1. Objects and Scope of Research

The purpose of this study is to investigate the mechanism of consumers' cognitive structure and attitude formation towards Digital Collection, so the main research subjects include consumers who already hold, have held but have sold or transferred Digital Collection. Fifteen users were invited to participate in this experiment through the private messaging function of Bilibili, Jing Tan, and iBox in China. The research subjects came from all over the country, and the consumers who participated in the interviews were screened and confirmed to ensure that their knowledge of Digital Collection and their experience of using them were representative. One-on-one in-depth interviews were completed using online voice, and each interviewee was interviewed for about 30 minutes.

### 3.2. Research Process and Implementation

In the association elicitation stage, the question "What do you associate with the term 'digital collection' when you see or hear it" was used to start the questioning of the respondents, and the ladder interview [10] method was used to elicit more associations related to Digital Collection. At the stage of association screening, considering that Digital collections are an emerging concept and people's perceptions and associations are not yet stable and lack consensus, associations with a frequency of less than 50% were not eliminated. In the end, the associations with similar content were combined and the number of times they appeared was counted, and the content is summarized in Table I.

In the phase of mapping consumers' personal maps, the survey experiment was conducted mainly in an online format. Firstly, the respondents were shown the screened 35 association words. The drawn cognitive structure map was also used as an example to tell the respondents about the mapping process, including the types of associations that may be included in the BCM map, the associations between the associates and the study research object and different associates, and the strength of the associations, which finally resulted in a personal cognitive structure map.

By aggregating the individual cognitive structure maps of all consumers and determining the core associative words and non-core associative words, the strength of association between associative words, etc., the aggregated map of consumers' cognitive structure of Digital Collection is drawn. Through the aggregated map, the current path of consumer cognitive formation of Digital Collection can be seen. The map of the overall consumer cognitive structure of Digital Collection drawn is shown in Fig. 1.

## 4. ANALYSIS AND DISCUSSION OF RESULTS

### 4.1. Direct Association Analysis

The aggregate map of the cognitive structure of digital collections shows that consumers' first level of association with digital collections is a direct association, mainly concentrated in the four items of "investment profit", "platform", "artwork" and "novelty". In other words, consumers' primary cognition of digital collections is

TABLE I: SUMMARY OF CONSUMER ASSOCIATIONS FOR DIGITAL COLLECTION

Associative word	Times	Associative word	Times
Speculation	13	Lack of platform management	6
Investment profit	12	New technology	5
Novelty	11	Collection value	5
Lack of policy supervision	10	3D/AR	5
Ownership	8	Unique code	5
Rarity	7	Platform	5
Brand association	7	KOL	5
Beauty	7	Economic value	5
Unique use rights	7	Less owner	6
High risk of speculation	6	Banned of secondary market transactions	6
Combined with Chinese traditional cultural	6	Promotion	6
Star	6	Self-control	6
Empower the real economy	6	High production content	6
Timely	6	Artwork	6
Official community	6		

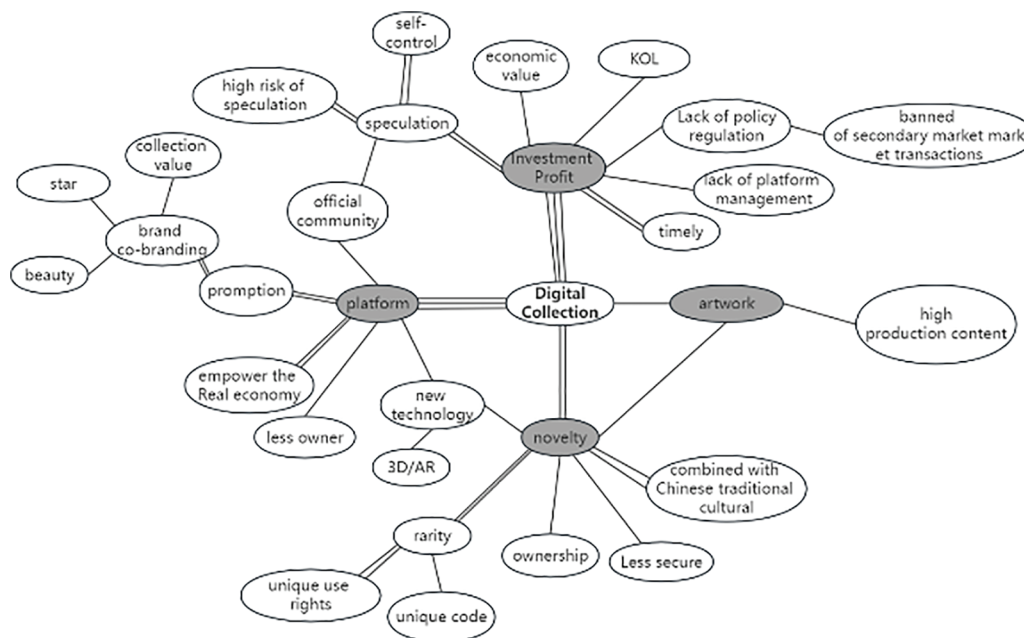


Fig. 1. Map of consumers' perceived structure of digital collection.

manifested in the four aspects of “investment profit”, “distribution platform”, “art” and “novelty”.

According to the strength of direct association, the strength of association between “investment profit” and “platform” and “digital collection” is the most significant, which belongs to the high strength of association; the strength of association between “novelty” and “digital collection” belongs to medium strength of association; and the strength of association between “artwork” and “digital collection” is relatively weak, which belongs to the low strength of association.

## 4.2. Indirect Association Analysis

### 4.2.1. “Investment Profit” Association Analysis

Respondents' cognitive associations of “investment profit” mainly focus on the aspects of “strong timeliness”, “lack of platform management”, “lack of policy supervision”, “KOL”, “economic value” and “speculation”. From the perspective of connection strength, the connection of “investment profit”, “speculation” and “timely” belongs

to the medium connection strength; The association of “speculation” with “high risk of speculation” and “self-control” belongs to the medium association strength. The other associations were of low connection strength.

The cognitive structure of “investment profit” shows that consumers are open to the economic attributes of Digital Collection, but have some concerns about the risk of bubbles and market stability that economic attributes may bring. When a digital collection generates user transactions or circulation, its economic value is generated. However, this economic value fluctuates over time, creating a risk of speculation for consumers. In addition, at present, there are no perfect domestic laws and regulations to effectively regulate the Digital Collection market, many platforms have closed down due to mismanagement, making many consumers lose their assets, which undoubtedly increases the uncertainty as well as the risk of the market when consumers buy Digital Collection.

#### 4.2.2. "Platform" Association Analysis

The "distribution platform" is linked to "new technology", "promotion", "empower the real economy" and "official community". "Promotion" is connected with "brand co-branding" and "fewer holders"; "Brand co-branding" is associated with "collection value", "star" and "beauty". "New technology" is linked to "3D/VR".

The feedback from consumers regarding distribution platforms reveals a strong preference for the promotion and utilization of Digital Collections. Original or co-branded collections with celebrity IPs are particularly well-received by survey respondents. To create custom-themed Digital Collections for limited promotions, distribution platforms secure IP licensing from brands or celebrities. These collections are highly sought after due to their aesthetically pleasing designs, attracting passionate consumers to make a purchase. Respondents also appreciate the combination of real-world industries with Digital Collections, a unique application with Chinese characteristics that drives the development of local industries. Additionally, the distribution platform integrates emerging display technologies such as 3D modeling and AR to enhance the consumer experience. Consumers can share and display their Digital Collections within the platform's official community, promoting user interaction and encouraging others to make a purchase.

#### 4.2.3. "Novelty" Association Analysis

"Novelty" and "rarity", "new technology", "combined with Chinese traditional culture", "artwork", "ownership" and "less secure". From the point of view of connection strength, the connection of "novelty" with "combined with Chinese traditional culture" and "less secure" belongs to the middle connection strength. The connection between "rarity" and "unique use rights" belongs to the medium connection strength. The connection between "new technology" and "3D/VR" belongs to the medium connection strength.

Based on the cognitive concept of "novelty," it's clear that consumers are intrigued by the innovation of Digital Collections. However, some individuals may still have reservations about the technology itself. Fortunately, Blockchain technology can help establish ownership and rarity of these digital items, while incorporating 3D and VR displays to enhance the consumer experience. This new approach to traditional culture has also become popular among younger demographics. Nevertheless, concerns about technology safety are still present, including issues such as privacy breaches and legal complications, which may amplify security risks for those who engage in purchasing Digital Collections.

#### 4.2.4. "Artwork" Association Analysis

From the map of the consumer cognitive structure of digital collections, it can be seen that there are two aspects of the connecting content of "artwork". On the one hand, the "artwork" is directly connected with "high production content", and the connection strength is low. On the other hand, "artwork" and "novelty" are connected, and the connection content and strength can be seen in the previous analysis.

Consumers generally view Digital Collection, an emerging form of art, as a breath of fresh air for the traditional art industry. As a type of digital art collection, it shares many features with traditional artwork, leaving a lasting impression on viewers. This similarity encourages consumers to associate Digital Collections with works of art from the very first interaction. Furthermore, Digital Collection maps traditional art onto the internet, injecting it with modern elements and presenting high-quality traditional culture to consumers, particularly younger generations.

## 5. CONCLUSION

This study explores the cognitive structure of consumers' Digital Collection using BCM technology, and finds that consumers' direct associations with Digital Collection are in the four aspects of "investment profit", "distribution platform", "novelty" and "artwork". The study found that consumers' direct associations with Digital Collection are in the four aspects of "investment profit", "distribution platform", "novelty and novelty" and "artwork", and from the overall viewpoint, consumers' perceptions of Digital Collection focus on the following three aspects.

Firstly, consumers' knowledge of Digital Collection mainly focuses on their economic attributes, while their knowledge of their artwork is weak. As one of the application forms of digital artwork, Digital Collection contains the artist's artistic conception, content form, connotation and other aspects of the creation of the artist's thinking, taking into account both technical and artistic attributes. From the consumer's perception of the content can be seen, the current digital collection is capitalized, so that it loses the essence of "artistry", the phenomenon of price manipulation, which is contrary to the concept of "artistry".

Secondly, for the application of Digital Collection, the consumers' deepest perception is the integration of the real industry and original content-based Digital Collection. Currently, Digital collections are not only limited to the "digital goods" purchased by users but also provide a new solution path for the marketing practice of brands and China's digital economy to promote the real with the virtual.

Finally, in terms of the innovation of Digital Collection, the innovation of technology and content has impressed consumers, but the security of the new technology is a concern for consumers. Through the new technology, Digital collections are different from the previous Digital collections, with clear ownership attribution; the content design, combined with traditional culture, brings consumers closer to traditional culture and also provides a new way to promote traditional culture. However, the adoption of new technologies may face the risk of code leakage and irregularities, as well as consumer privacy leakage and legal risks, which greatly increase the security risks for consumers when purchasing.



## 6. RECOMMENDATIONS

Based on the above research findings, the following suggestions are made for the market development and promotion of Digital Collection:

First, the regulation of the Digital Collection market should be strengthened, and relevant laws and regulations should be improved to protect the development of Digital Collection. Regulatory measures should be formulated centred on distribution platforms, and a licensing system for Digital Collection distribution platforms should be implemented, with clear conditions for distribution platforms to obtain licenses and an exit mechanism. At the same time, it should clarify the regulator and the main body of regulation of the Digital Collection market, improve the laws and regulations, clarify the regulatory standards and the responsibilities of the regulated objects, and establish a mechanism for multi-departmental cooperation and co-regulation, to ensure the healthy and orderly development of the market.

Second, fully explore IP resources, strengthen the application of Digital Collection and help the development of the real economy. Cross-border co-branding with brands or tapping into the characteristics of their platforms to create exclusive IP, and launch customized Digital Collections to strengthen interaction with consumers. At the same time, expanding the types of digital collection applications, such as games, music, films, etc., can attract more quality creators and expand the digital collection market. Local governments can take the lead in promoting local venues to cooperate with Digital Collection publishers for offline exhibitions, enhancing the connection between Digital Collection, a new type of digital economy, and the real economy, and promoting the development of the local real economy.

Third, improve the artistic attributes of the Digital Collection, combining traditional culture and new technology to improve the novelty of design. In the eyes of most consumers, Digital collections are “works of art”, and they often prefer Digital collections with high aesthetic value. Combined with specific historical background, historical figures, traditional culture, etc., or invite artists to design collectables to attract more consumers and improve the collection value and cultural value of Digital Collection. Secondly, the distribution platform can also combine with the current emerging technologies when launching a series of Digital Collection, such as 3D models, AR, etc., to enhance the interaction between consumers and Digital Collection, and to improve consumers’ pleasure.

## ACKNOWLEDGMENT

Thanks to all those who were willing to participate in the online interviews.

## FUNDING

This research is supported by the Tianjin Postgraduate Research and Innovation Project “Research on Key Influencing Factors of NFT Digital Collection User Adoption Based on Blockchain Application (2022SKY288)”.

## CONFLICT OF INTEREST

The authors declare that they do not have any conflict of interest.

## REFERENCES

- [1] Wang Q, Li R, Wang Q, Chen S. Non-fungible token (NFT): overview, evaluation, opportunities and challenges. To be published in Physical Review B. Arxiv. [Preprint] 2021. Available from: <https://arxiv.org/abs/2105.07447>. [Accessed 28th August 2023].
- [2] Bao H, Roubaud D. Non-fungible token: a systematic review and research agenda. *J Risk Financ Manag*. 2022;15(5):215.
- [3] Hofstetter R, de Bellis E, Brandes L, Clegg M, Lamberton C, Reibstein D, et al. Crypto-marketing: how non-fungible tokens (NFTs) challenge traditional marketing. *Mark Lett*. 2022;33:705–11.
- [4] Colicev A. How can non-fungible tokens bring value to brands. *Int J Res Mark*. 2023;40(1):30–7.
- [5] John DR, Loken B, Kim K, Monga AB. Brand concept maps: a methodology for identifying brand association networks. *J Marketing Res*. 2006;43(4):549–63.
- [6] Brandt C, De Mortanges CP. City branding: a brand concept map analysis of a university town. *Place Brand and Public Dipl*. 2011;7:50–63.
- [7] Torkestani MS, Bakhshizadeh Borj K, Jahedi P. Tourism market segmentation of kish free zone: a new approach to brand concept map. *Tour Manag Stud*. 2019;14(47):29–63.
- [8] Martínez JA, Martínez L. Applying brand concept maps to study perceived quality in sports services. *Revista Internacional de Medicina y Ciencias de la Actividad Física y el Deporte*. 2009;9(35):232–53.
- [9] Zenker S. Measuring place brand equity with the advanced brand concept map (aBCM) method. *Place Brand and Public Dipl*. 2014;10:158–66.
- [10] Trocchia PJ, Swanson DL, Orlitzky M. Digging deeper: the laddering interview, a tool for surfacing values. *Journal of Management Education*. 2007;31(5):713–29.