

Unlocking the Secret of NFTs in China: The Role of NFT Characteristics in Purchase Decision Making

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Abstract

Non-fungible tokens (NFTs) are scarce digital assets, whose limited supply significantly affects consumers' product perception and purchase behavior. Few studies have examined consumers' cognitive evaluations and purchase intention towards NFTs in the context of Chinese luxury fashion brands. This paper aims to close this gap by investigating the impact of consumers' cognitive perceptions (i.e., perceived scarcity, perceived uniqueness, and perceived value) and personality trait (i.e., need for uniqueness) on their purchase intention towards luxury fashion NFTs. The mediating effect of perceived value between perceived uniqueness and purchase intention was also tested. A total of 251 valid questionnaires were collected via purposive sampling and analyzed using partial least squares structural equation modeling. Drawing on the commodity theory, significant relationships were found between scarcity, need for uniqueness, the resulting cognitive factors (perceived uniqueness and perceived value) and purchase intention. Chinese consumers perceive the NFTs of luxury brands to be scarce and need uniqueness, which enhances their perception of uniqueness and consequently, their perception of value. Perceived value then positively affects purchase intention, which supports the mediating role of perceived value. This study validates the importance of scarcity for NFTs from luxury fashion brands in China, providing valuable references for luxury brand marketers and academicians.

Keywords: NFTs, Scarcity, Uniqueness, Value, Luxury fashion brands, Purchase intention

Introduction

With the increasing global popularity of the metaverse and blockchain, marketers are starting to embrace digital assets like non-fungible tokens (NFTs), with the belief that these new technologies can transform marketing (Huang & Rust, 2018; Scholz & Duffy, 2018; Chohan & Paschen, 2021; Gartner, 2021) by enhancing consumers' interest and buying behavior (Kaczynski & Kominers, 2021). NFTs represent physical and digital creative work, including art, games, fashion, and more (Rehman et al., 2021), as unique digital assets that cannot be interchanged (Dowling, 2022; Rennie et al., 2019). They are stored on the blockchain as units of data and used as certifications to represent the ownership of those digital assets (Okonkwo, 2021). As digital tokens indicating ownership can be purchased by consumers, NFTs are, in fact, commodities (Chohan & Paschen, 2021). Consequently, NFTs can significantly change brands' marketing processes in the future (Chohan & Paschen, 2021).

As of June 2022, the NFT market was reported to be worth more than \$40 billion, and its valuation is still rising (Carter, 2022). Despite some misunderstanding that the sales volume and active user count of the NFT market are flatlining (Vigna, 2022), the total global trading volume of NFTs exceeded \$54 billion in 2022, according to the cryptocurrency market analytic platform IntoTheBlock (Nicenکو, 2022). In China, NFT is traded as a commodity in a different manner than the rest of the world. Specifically, NFTs in the Chinese market are known as "digital collections," which are regarded as derivatives of blockchain technology rather than tradable digital assets (Tong, 2022). They are governed by the state and cannot be resold in the second-hand market (Xu, 2022). To reduce the risk of speculation, Chinese NFT platforms allow people to purchase, collect, and transfer NFTs only upon meeting the minimum requirement of two-year ownership (Andy & Tian, 2022). Despite these restrictions, Statista shows that Chinese consumers top the list of those most interested in NFTs in Google search engines (Carter, 2022). In 2021, the number of NFT collections issued by various trading platforms in China was about 4.56 million, with a total issuance market value of USD150 million and an average selling price of approximately USD 33.33 (Andy & Tian, 2022). It is estimated that the NFT market in China will grow at a rate of 150%, reaching RMB 29.52 billion by 2026.

NFTs highlight the issue of scarcity in the digital realm (Valeonti et al., 2021). People's works have become more valuable due to their limited supply on blockchain (Trautman, 2021). In fact, NFTs can be made scarce digitally, as creators can control the number of NFTs associated with a physical product or a digital asset using blockchain technology's smart contracts, which record each transfer and prevent duplication (Serada et al., 2021; Popescu, 2021; Valeonti et al., 2021). Thus, scarcity is a key factor in improving the valuation of NFTs (Trautman, 2021). As such, the launch of NFTs offers value to marketing campaigns (Kaczynski & Kominers, 2021), especially in fostering the perception of scarcity and uniqueness (Rehman et al., 2021; Sestino et al., 2022).

Regarded as digital collectibles in China, scarcity has a far-reaching influence on the

NFT-related decision-making process, particularly in the consumption of luxury goods and brands (Phau & Prendergast, 2000; Zhu & Ratner, 2015). In the context of luxury fashion brands, NFTs are sold based on graphic designs from collections or tied into unique and limited editions as collectibles, suggesting scarcity and an increase in value over time (Katharina, 2022). This limited-edition approach applied by luxury fashion brands enhances the core value of NFTs based on scarcity (Deraiya, 2022; Chohan & Paschen, 2021) and further ensures the uniqueness of these digital assets (He et al., 2022). Consumers' perceived uniqueness can be a consequence of consumers' need for uniqueness (Song & Lee, 2013). Those with a higher need for uniqueness are more likely to show interest in scarce objects that are perceived as valuable to enhance their uniqueness (Tian et al., 2001).

This phenomenon raises a critical concern about the impacts of NFTs' scarcity and uniqueness on buying intention, which remain unexplored. NFT-related marketing studies are limited, with existing studies mostly focusing on the art, digital, and sports industries (Serada et al., 2021; Bsteh & Vermeylen, 2021; Rae, 2021; Kugler, 2021; Fowler & Pirker, 2021), or analyzing NFTs in the context of its definition and features (Popescu, 2021), financial trade risk (Jordanoska, 2021), copyright (Bodó et al., 2022), and value improvement (Kireyev & Lin, 2021). Importantly, the investigation of NFTs in the luxury fashion brand setting is scarce, especially in China, due to the Chinese government's opposition to cryptocurrencies to avoid money laundering activities (Tong, 2022). This paper, therefore, intends to examine the relationships among consumers' cognitive perceptions (i.e., perceived scarcity, perceived uniqueness, and perceived value), need for uniqueness, and purchase intention towards luxury fashion NFTs in China's luxury fashion industry.

Literature Review

A commodity is regarded as something that has the potential to be possessed by meeting three criteria: useful, transferable, and desirable (Brock, 1968; Lynn, 1991; Brock & Mazzocco, 2004). The underlying mechanism of the commodity theory is the psychological phenomenon of scarcity's effect on value, which states that people desire scarce products more as owning them would satisfy their need for distinctiveness or uniqueness (Brock, 1968; Lynn, 1991; Fromkin & Snyder, 1980). In this theory, the word "value" refers to the potential for affecting people's behavior and desire (Brock, 1968). Many scarcity-related studies have adopted the commodity theory (e.g., Brock, 1968; Lynn, 1991; Shi et al., 2020; Yang et al., 2020; Goldsmith et al., 2020; Kim et al., 2020) by claiming that scarcity enhances the value of any commodity that can be possessed. In marketing, products can be made valuable and desirable by brands or companies through the manipulation of perceived scarcity (Verhallen & Robben, 1994).

In line with the commodity theory (Brock, 1968), luxury fashion brands are attracting Chinese consumers by creating limited-number NFT collectibles on platforms and making their NFT products more scarce than other brands. As commodities, NFTs impute value for consumers when "they consider NFTs' comparative scarcity as digital

objects” (Wang et al., 2021, p. 2). Thus, this research adopts the commodity theory as the theoretical foundation for analyzing the scarcity effect of NFT on purchase intention.

Perceived Scarcity and Perceived Uniqueness

Uniqueness is one of NFTs’ characteristics, which is the main reason marketers and brands are launching promotional campaigns with this feature (Koch & Benlian, 2015). Likewise, scarcity is a critical factor in blockchain tokens as it gives people the idea of being “limited edition” (Liddell, 2022). According to previous research, products arouse the interest of consumers due to scarcity in supply or time (Gierl et al., 2008; Jang et al., 2015). The scarcity of NFTs is mostly artificially created by brands with a limited-number strategy (Serada et al., 2021; Popescu, 2021), which influences perceived uniqueness, eventually leading to the desirability of scarce products (Chen et al., 2020; Chen & Sun, 2014).

Consumers are more likely to pursue uniqueness and differentiate themselves from other consumers by owning scarce products (Fromkin, 1970; Snyder, 1992). The possession of scarce products could be one of the main options to convey consumers’ personal uniqueness (Wu & Hsing, 2006; Snyder, 1992; Fromkin & Snyder, 1980; Wu et al., 2012). Luxury brand marketers commonly apply the limited-supply strategy (Wiedmann et al., 2009), which aims to influence consumers’ perception of uniqueness, drives their scarcity assumption, and satisfies their need for uniqueness (Chen et al., 2020). Digital uniqueness is one of the main components that create the value of digital collectibles (Trautman, 2021). NFTs, as a new technological tool for marketing, are launched by luxury fashion brands as limited-edition products (Tan, 2021), which implies the difficulty in obtaining these NFTs. Therefore, the following hypothesis is proposed:

H1 Consumers’ perceived scarcity of luxury fashion brand NFTs in China is positively associated with the NFTs’ perceived uniqueness.

Need for Uniqueness and Perceived Uniqueness

Fromkin and Snyder (1980) defined the need for uniqueness as the necessity for people to pursue distinctiveness or differentiation from others. In the context of consumers’ purchasing activity, Tian et al. (2001) expanded this definition into the necessity for consumers to pursue distinctiveness from others through the possession, utilization, or disposal of goods to develop and enhance their self and social image. Consumers with a higher need for uniqueness pay more attention to scarce products that are perceived as high value to enhance their uniqueness by possessing those goods (Tian et al., 2001). The stronger a consumer’s need for uniqueness, the more likely they are to choose products that are relatively innovative or unique (Chieng et al., 2022; Fromkin & Snyder, 1980; Tian et al., 2001).

People are known to be driven by their need to be distinguished from others (i.e., need for uniqueness) when they are more independent in product judgment (Song & Lee,

2013). Song and Lee (2013) proposed that consumers with a higher need for uniqueness perceive the products they purchase as more unique. Product categories such as luxury goods are frequently viewed as unique due to inherited scarcity or innovativeness (Urbina et al., 2021; Kauppinen-Räsänen et al., 2018; Fromkin & Snyder, 1980). Consistent with this, NFTs of luxury fashion brands may be perceived as scarce and unique digital assets because of consumers' need for uniqueness. Therefore, the following hypothesis is proposed:

H2 Consumers' need for uniqueness is positively associated with their perceived uniqueness of luxury fashion brand NFTs in China.

Perceived Uniqueness and Perceived Value

Consistent with the commodity theory proposed by Brock (1968), consumers purchase scarce products to satisfy their desire for uniqueness, eventually enhancing the perceived value of the products (Wu et al., 2012). Perceived value is an overall judgment made by consumers after comparing what they sacrifice and receive (Wu & Hsing, 2006; Kuo et al., 2009; Cronin et al., 1997; Cronin et al., 2000). Uniqueness could enhance consumers' positive judgment towards products by satisfying their need for uniqueness (Snyder, 1992; Fromkin & Snyder, 1980; Tian et al., 2001). Therefore, there is strong evidence that perceived uniqueness is positively related to perceived value (Wu et al., 2012; Chen & Sun, 2014). Consistently, in the context of the NFTs of luxury fashion brands, consumers' perceived uniqueness should drive the products' perceived value. The following hypothesis is thus proposed:

H3 Consumers' perceived uniqueness of luxury fashion brand NFTs in China is positively associated with the NFTs' perceived value.

Perceived Value and Purchase Intention

Numerous studies have shown that the perception of product value is a crucial driver of purchase intention (Grewal et al., 1998; Wu & Lo, 2017; Chen & Sun, 2014), including in the case of luxury brands (Tynan et al., 2010). Consumers show a higher purchase intention if they perceive that they receive more than they give up (Kuo et al., 2009; Cronin et al., 2000). Chen et al. (2020) investigated the concept of scarcity marketing in luxury brands and found that perceived value affects consumers' desire to buy tangible luxury products. Despite the different nature of tangible and digital products, NFTs, as intangible and digital assets, have huge potential to arouse consumers' purchase intention when a favorable judgment is formed after consumers compare what they sacrifice and receive. Therefore, the following hypothesis is proposed:

H4 Consumers' perceived value of luxury fashion brand NFTs in China is positively associated with their purchase intention towards the NFTs.

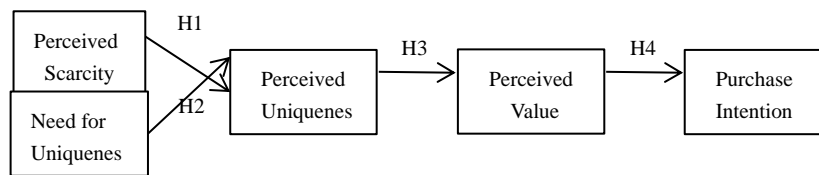
The Mediating Role of Perceived Value

The mediating role of perceived value in explaining purchase intention has been discussed in past studies in various contexts (e.g., Shafiq et al., 2011; Chen et al., 2021). Although no previous study has examined the mediating effect of perceived value between NFTs' perceived uniqueness and purchase intention (e.g., Sung et al., 2023; Kiliçaslan & Ekizler, 2022; Lee et al., 2023), a review of the previous literature suggests that the perceived uniqueness of NFTs could influence buying intention through perceived value (e.g., Wu et al., 2012; Chen & Sun, 2014). Both Wu et al. (2012) and Chen and Sun (2014) found that perceived uniqueness has a significant positive effect on perceived value, which in turn, stimulates consumers' purchase intention. In fact, numerous consumer studies have supported the significant effect of perceived value on purchase intention (Tynan et al., 2010; Chen et al., 2020; Grewal et al., 1998; Wu & Lo, 2017). Therefore, the following hypothesis is proposed:

H5 Perceived value mediates the relationship between perceived uniqueness and the purchase intention of luxury fashion brand NFTs in China.

The conceptual model of this research is shown in Figure 1.

Figure 1: Conceptual model



Methodology

Research Design and Data Collection

Based on the commodity theory, this study sought to validate the impact of consumers' need for uniqueness and scarcity-related perceptions (i.e., perceived uniqueness and perceived value) on their purchase intention towards luxury fashion NFTs in China. To reach the target population of those who have the potential to own these NFTs, this study adopted purposive sampling, in which respondents had to: 1) have heard of, known about, or bought NFTs; 2) have heard of, known about, or bought any luxury brands (e.g., Louis Vuitton, Gucci); 3) be capable of using the internet or mobile phone to search for product information; and 4) be able to afford luxury brands.

Self-administered questionnaires were distributed electronically through the Survey Plus online platform in mid-2022. Prior to data collection, participants were notified that the survey would be optional and anonymous, and that the results would be completely confidential and utilized only for academic research. Following the data

collection exercise, 251 valid responses were collected out of a total of 267 distributed, yielding a response rate of 98% and usability rate of 96%. The sample size was larger than the minimum requirement of 127 determined by an a priori test using G*Power analysis.

Measurement Scales

As shown in Table 1, perceived scarcity was evaluated with five items developed by Wu et al. (2012) to measure supply-limited products and product availability. The need for uniqueness was assessed using eight items adapted from Lynn and Harris (1997). Perceived uniqueness was measured with three items adapted from Franke and Schreier (2008), while four items for perceived value were derived from Wu et al. (2012). Lastly, the three items for purchase intention were modified from Dodds et al. (1991). All items were evaluated on a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5).

The original measurement items were in English and were therefore translated into Mandarin by linguistic experts. To establish equivalence of meaning and minimize conceptual differences in connotation and understanding among respondents, this study adopted the collaborative and iterative translation technique proposed by Douglas and Craig (2007). Prior to the main study, pre-tests were conducted with seven target respondents to check for grammatical errors and typos, as well as to ensure the usability and comprehensibility of the questionnaire.

Table 1: Measurement items

Variables	Measurement item	Scale	Source
Perceived Scarcity (PS)	PS 1. I think that the current supply of the NFT is small. PS 2. I think that the NFT will sell out soon. PS 3. I think that many people will buy the NFT. PS 4. I feel that the limited edition of the NFT will cause many people to buy. PS 5. I think the limited supply will cause a lot of people to buy.	five-point scale 1=strongly disagree 5=strongly agree.	Wu, W.Y., Lu, H.Y., Wu, Y.Y. and Fu, C.S.(2012)
Perceived Uniqueness (PU)	PU 1. I perceive the NFT as highly unique. PU 2. The NFT is one of a kind. PU 3. The NFT design is really special.	five-point scale 1=strongly disagree 5=strongly agree	Franke, N. and Schreier, M. (2008)
Need for Uniqueness (NFU)	NFU1. I am very attracted to rare objects. NFU2. I tend to be a fashion leader rather than a fashion follower. NFU3. I am more likely to buy a product if it is scarce. NFU4. I would prefer to have things designed for a special group rather than all consumers.	five-point scale 1=strongly disagree 5=strongly agree	Lynn, M. and Harris, J. (1997)

	NFU5. I enjoy having things that others do not. NFU6. I rarely pass up the opportunity to order custom features in the products I buy. NFU7. I like to try new products and services before others do. NFU8. I enjoy shopping at stores that carry merchandise which is different and unusual.		
Perceived Value (PV)	PV 1. The NFT is good value for money. PV 2. The expected price for the NFT is acceptable. PV 3. The NFT is considered to be a good buy. PV 4. The NFT appears to be a good bargain.	five-point scale 1=strongly disagree 5=strongly agree.	Dodds, W.B., Monroe, K.B. and Grewal, D., (1991)
Purchase Intention (PI)	PI 1. My willingness to buy the NFT is high. PI 2. The probability I would consider buying the NFT is high. PI 3. The likelihood I would purchase the NFT is high.	five-point scale 1=strongly disagree 5=strongly agree.	Dodds, W.B., Monroe, K.B. and Grewal, D., (1991)

Results

This study used SPSS 26 for data screening and cleaning, including missing values. Incomplete or abnormal responses were deleted. Additionally, two items of perceived scarcity and four items of need for uniqueness were removed due to low factor loadings (all below 0.6).

Next, the study tested for potential common method variance (CMV) and confirmed that it was not a problem. On the one hand, Harman’s single factor analysis showed that only 35.30 percent of the variance was explained by a single factor. According to Podsakoff et al. (2003), if the total variance for a single component is less than 50 percent, then CMV does not influence the data. On the other hand, the highest value of the inner variance inflation factor (VIF) was 1.22, which is below 3.3; this indicates the absence of common method bias (Kock, 2015). Thus, CMV was not a concern in this study.

The means and standard deviations of all variables were subsequently examined. The mean scores of all variables ranged from one (1) to five (5) and were generally above the mid-score of three (3). The standard deviation scores were all below 0.7, ranging from 0.50 to 0.68. Perceived uniqueness had the highest mean score (M=0.56), followed by need for uniqueness (M=0.50), purchase intention (M=0.68), perceived value (M=0.59), and perceived scarcity (M=0.56).

Partial least squares structural equation modeling (PLS-SEM) was used to test the hypotheses. In the initial stage of PLS-SEM, the measurement model was analyzed. The study first assessed reliability and convergent validity to ensure the consistency of

multiple items in measuring the same construct. The values of the items' loadings, average variance extracted (AVE), and composite reliability (CR) were examined for this purpose, the results of which are presented in Table 2. The factor loadings for all items ranged from 0.736 to 0.891, exceeding the 0.70 threshold recommended by Hair et al. (2014). All AVE values met the satisfactory level as well, being higher than 0.5. CR values were also higher than 0.7, ranging from 0.824 to 0.911. The results indicate that the measurements had acceptable internal consistency reliability and convergent validity.

The constructs' discriminant validity was then examined to demonstrate the degree to which a construct is distinct from other constructs based on the AVE's root square (Hair et al., 2010). The results of the Heterotrait-Monotrait Ratio (HTMT) criterion shown in Table 3 revealed that the HTMT values for all latent variables ranged from 0.571 to 0.891, lower than the HTMT.90 cutoff recommended by Henseler et al. (2015). These results provide support for the discriminant validity of the study constructs.

In addition to discriminant validity, potential collinearity issues were considered by examining the VIF values of each set of predictor constructs. The results shown in Table 2 indicate that there was no problem with lateral multicollinearity, as all VIF values ranged from one to 2.159. Overall, the results indicate that the model used in this study was fit and valid for creating paths to test the hypotheses.

Table 2: Internal consistency reliability and convergent validity

Construct	Items	Factor Loadings	AVE	CR	Cronbach's	VIF
Perceived Scarcity (PS)	PS2	0.763	0.628	0.835	0.704	1
	PS3	0.813				
	PS4	0.800				
Need for Uniqueness (NFU)	NFU3	0.754	0.583	0.848	0.763	1.226
	NFU5	0.741				
	NFU7	0.761				
	NFU8	0.798				
Perceived Value (PV)	PV1	0.838	0.644	0.878	0.814	2.159
	PV2	0.747				
	PV3	0.758				
	PV4	0.860				
Purchase Intention (PI)	PI1	0.862	0.773	0.911	0.853	1.732
	PI2	0.891				
	PI3	0.885				
Perceived Uniqueness (PU)	PU1	0.812	0.609	0.824	0.679	1.226
	PU2	0.774				

PU3	0.754
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Note: Items PS1 & PS5 in Perceived Scarcity (PS) and NFU1, NFU2, NFU4 & NFU6 in Need for Uniqueness (NFU) were removed due to low factor loadings.

Table 3: Heterotrait-monotrait ratio (HTMT)

	NFU	PS	PU	PV	PI
NFU					
PS	0.572				
PU	0.734	0.703			
PV	0.775	0.731	0.808		
PI	0.799	0.668	0.762	0.891	

Hypothesis Testing

Bootstrapping analysis with 5,000 subsamples was performed using SmartPLS 3.0 software. The significance level and t-values for all hypothesized paths were examined. As shown in Table 4, all four direct relationships were supported at the one percent significance level and with t-values greater than 2.33. Specifically, perceived scarcity ($\beta=0.059$, $p < 0.01$) and need for uniqueness ($\beta=0.395$, $p < 0.01$) were found to have a positive relationship with perceived uniqueness. Perceived uniqueness ($\beta=0.606$, $p < 0.01$) was revealed to be significantly related to perceived value. Additionally, there was a significant correlation between perceived value and purchase intention ($\beta=0.743$, $p < 0.01$). Therefore, H1, H2, H3, and H4 were all supported.

In addition to reporting statistical significance (i.e., p-value), this study also considered substantive significance using f^2 , which reveals the effect size of all paths. According to Cohen et al.'s (2013) guidelines, three levels of effect size represent small ($f^2= 0.02$), medium ($f^2= 0.15$), and large effects ($f^2= 0.35$), respectively. From Table 4, perceived value had the largest effect on purchase intention ($f^2= 1.23$), followed by the effects of perceived uniqueness on perceived value ($f^2= 0.58$), need for uniqueness on perceived uniqueness ($f^2= 0.2$), and perceived scarcity on perceived uniqueness ($f^2= 0.13$). The findings indicate that the scarcity strategy of NFTs increases the perception of uniqueness among Chinese consumers ($f^2= 0.13$). Consumers with a high desire for uniqueness were also found to see NFTs as unique digital collectibles ($f^2= 0.2$). Although the impacts of perceived scarcity and need for uniqueness on the perception of uniqueness were moderate, perceived uniqueness exhibited a strong effect on perceived value ($f^2= 0.58$). With the rise of perceived uniqueness among consumers, Chinese consumers would judge the NFTs of luxury fashion brands highly. Moreover, Chinese consumers were found to have a stronger purchase intention ($f^2= 1.23$) when they perceive a high value of the NFTs launched by luxury fashion brands. In other words, consumers show strong desire upon their high overall judgment of NFTs.

Regarding the predictive relevance of the model, Q^2 was tested using the blindfolding procedure. As shown in Table 4, Q^2 values for perceived uniqueness ($Q^2=0.22$), perceived value ($Q^2=0.23$), and purchase intention ($Q^2=0.42$) were greater than zero.

Therefore, the model had sufficient predictive relevance, meeting the criteria for Q^2 suggested by Hair et al. (2014).

Mediation Testing

The mediation effect was tested using the bootstrapping test. The significance of the relationship was measured using the t-value and differences in the confidence interval. The results of the mediation testing are presented in Table 4. The indirect effect of the pathway “perceived uniqueness → perceived value → purchase intention” was significant, indicating that perceived value has a mediating effect on the relationship between perceived uniqueness and purchase intention (t-value=9.373, $\beta=0.048$, $p=0.000$). The results also show that the confidence interval of this effect (LL = 0.358, UL = 0.546) did not straddle zero, which proves that there is a mediation effect and supports H5. These results indicate that perceived value explains the effect of perceived uniqueness on the purchase intention of Chinese consumers in the context of luxury fashion NFTs. In other words, Chinese consumers make positive judgments of luxury fashion brand NFTs, which are triggered by their perceived uniqueness, and consequently show a strong desire to purchase the NFTs.

Table 4: Results of hypothesis testing

Hypothesis	Relationship	Std.	Std. Error	t-value	P-value	LLCI	ULCI	f ²	Q ²	Decision
H1	PS → PU	0.321	0.059	5.442**	0.000			0.13	0.22	supported
H2	NFU → PU	0.395	0.064	6.155**	0.000			0.2	0.22	supported
H3	PU → PV	0.606	0.047	12.883**	0.000			0.58	0.23	supported
H4	PV → PI	0.743	0.034	21.737**	0.000			1.23	0.42	supported
H5	PU → PV → PI	0.450	0.048	9.373**	0.000	0.358	0.546			supported

Notes: t-value** > 2.33 ($p < 0.01$); t-value* > 1.65 ($p < 0.05$)

Discussion

Unlike tangible products, NFTs are intangible and scarce. Scarcity has always been an important marketing strategy for luxury fashion brands in attracting consumers (Ballina & Ballina, 2019). While some recent studies have investigated the impact of NFTs' scarcity (Sung et al., 2023), uniqueness (Kiliçaslan & Ekizler, 2022), and perceived value (Kiliçaslan & Ekizler, 2022) on NFT purchase intention (Kiliçaslan & Ekizler, 2022; Sung et al., 2023) and brand attitude (Lee et al., 2023) in different countries, due to their novelty, there is a lack of empirical consumer studies examining whether the scarcity of NFTs affects consumers' purchase intention in the context of the luxury fashion industry in China.

The findings of this study confirm the significant impact of perceived scarcity on consumers' purchase intention based on the commodity theory (Brock, 1968; Yang et al., 2020; Goldsmith et al., 2020; Kim et al., 2020). The results indicate that the

perceived scarcity of NFTs significantly increases their perceived uniqueness (H1). Previous research has shown that perceived scarcity enhances consumers' perceptions of uniqueness towards objects (Fromkin & Snyder, 1980; Chen et al., 2020; Chen & Sun, 2014). This study further demonstrates this relationship in the context of NFTs. The scarcer the NFTs are in the consumer's mind, the more unique the NFTs appear to the consumer in the luxury fashion market. The findings also corroborate Song and Lee's (2013) study on the effect of the need for uniqueness on perceived uniqueness (H2). Consumers with a higher desire for uniqueness treat NFTs as unique collectibles. The results further imply the positive influence of perceived uniqueness on perceived value (H3), confirming previous research findings (Aztiani et al., 2019; Franke & Schreier, 2008; Snyder, 1992).

Additionally, the influence of perceived value on purchase intention is reaffirmed in this study (H4). There is abundant literature on the significant relationship between perceived value and purchase intention (Tian et al., 2001; Grewal et al., 1998; Wu & Lo, 2017; Chen & Sun, 2014). However, most previous studies were not conducted in the context of NFTs. In this study, the finding illustrates that Chinese consumers show higher purchase intention towards NFTs when NFTs offer value to them. Lastly, this study confirms that consumers' perceived value plays a significant mediating role between perceived uniqueness and purchase intention in the context of luxury fashion NFTs (H5), contributing to the existing literature (Wu et al., 2012; Chen & Sun, 2014). It can be surmised that Chinese consumers show higher purchase intention towards luxury fashion NFTs when they perceive the NFTs as valuable on account of their uniqueness.

This study offers several important theoretical implications. First, it has expanded and built on the commodity theory (Brock, 1968) by empirically validating the impact of scarcity on consumers' purchase intention towards NFTs from luxury fashion brands in China. NFTs are regarded as digital products that can be possessed, transferred, and desired. Importantly, the scarcity of NFTs has a significant effect on consumers' cognitive perceptions (uniqueness and value) and serves as a driver of consumers' purchase intention. Second, this study explains the effect of NFTs' scarcity on consumers' perceptions in relation to luxury fashion NFTs. As NFTs are difficult to obtain, the perception of uniqueness is enhanced, which explains the importance of scarcity (Wright et al., 2004). The current findings show that consumers' perception of scarcity has a significant relationship with perceived uniqueness as luxury fashion brands launch NFTs with a limited-quantity scarcity marketing strategy. Furthermore, the perception of uniqueness of NFTs enhances consumers' positive judgment towards NFTs (Snyder, 1992; Fromkin & Snyder, 1980) since perceived uniqueness exerts a positive influence on perceived value when consumers consider NFTs in their purchasing behavior. Positive value judgment is also found to be a predictor of purchase intention. Ergo, the perception of the high value of luxury fashion NFTs predicts the purchase intention of NFTs in the Chinese market. Third, this is one of the pioneering efforts to examine perceived value as a mediator between perceived uniqueness and purchase intention in the NFT context. This study contributes to a better understanding of consumers' perceived value as an underlying mechanism that links consumers'

perceived uniqueness to their purchase intention. The findings support the mediation of perceived value in the relationship between perceived uniqueness and purchase intention in the context of luxury fashion brand NFTs in China. In other words, perceived uniqueness leads to buying intention when consumers believe that the NFT has good value.

Limitations, Future Research, and Conclusion

There were several limitations in this study. First, the study only investigated NFTs with the characteristic of scarcity as the main driver of consumers' purchase behavior. It remains unknown if consumers' purchase intention and value perceptions may also be influenced by other characteristics of NFTs, such as exclusivity, rarity, design aesthetics, and even authenticity (e.g., Chohan & Paschen, 2021; Hofstetter et al., 2022). Alternatively, future researchers could examine the effect of NFTs' scarcity on other consumer dimensions like social interaction, since social advancement is regarded as the main goal for Chinese consumers who are eager to buy luxury fashion brands (KPMG, 2023). Second, the study adopted the commodity theory (Brock, 1968) and Fromkin and Snyder's (1980) desire for uniqueness theory to explain the phenomenon of the scarcity purchasing of NFTs in the Chinese luxury fashion market. Future research could introduce more theories related to scarcity and uniqueness to analyze this phenomenon.

Third, this study's validation of the impact of NFTs' scarcity on purchase intention was limited to the luxury fashion industry and to a sample of Chinese consumers. It is significant to continue researching NFTs in different consumer industries in China and other regions, as consumers from different ages, genders, industries, or geographic backgrounds show distinct preferences. For example, it has been found that males show more interest in purchasing NFTs in countries like the U.S., India, and Malaysia (Laycock, 2022), while the opposite is true in countries like Thailand and Japan (Carnahan, 2022). Therefore, a cross-cultural comparative study of NFTs' scarcity may yield interesting differences.

Moreover, with the fast development of the Chinese market, consumers' purchasing habits are becoming more complex, while Gen Z is becoming the largest consumer base for luxury fashion brands (KPMG, 2023); this could be an area to explore in relation to NFTs. Also, different tier cities in China show different purchasing habits. Specifically, consumers in lower-tier cities, such as Tier 3 or Tier 4 cities, tend to be less sophisticated in their consumption and are more likely to purchase luxury goods through online channels, as there are fewer physical luxury stores in their cities (Melchers, 2022). These differences are worth exploring and comparing to gain deeper insights into NFT purchase behavior.

Finally, this study only investigated the effect of NFTs on purchase intention without examining its effects on branding. NFTs offer the possibility for luxury fashion brands to broaden their design and collections beyond what physical products can achieve, but

they should still be relevant to real-life products and services (Kirjavainen, 2022). Consumers can be persuaded by NFTs launched by a brand to purchase the physical products of that brand, thereby creating cross-selling opportunities between the online and offline worlds (Colicev, 2022). Therefore, it is crucial to analyze the effects of NFTs on luxury fashion brands' physical products. Future researchers could thus investigate whether brands can use NFTs to entice purchase in conjunction with the launch of their tangible products.

In conclusion, this study has empirically verified the relationship between perceived scarcity and purchase intention in the context of luxury fashion NFTs in China. Consumers' perceptions (i.e., perceived uniqueness and perceived value) and personality factors (i.e., need for uniqueness) were found to have a positive relationship with purchase intention. Furthermore, perceived value was validated as a mediator that explains the relationship between perceived uniqueness and purchase intention.

Practical Implications for Asian Business

In terms of managerial implications, this study clarifies the importance of NFTs' scarcity and uniqueness in enhancing consumers' perceptions and purchase intention in the Chinese luxury fashion market. Based on the commodity theory (Brock, 1968), the scarcity of NFTs has been proven to influence consumers' desire to purchase. To promote NFTs in the Chinese market, luxury fashion brands should utilize a scarcity marketing strategy by launching limited-supply NFTs. For example, the luxury fashion brand Lancôme launched a customized gift box with exclusive NFTs during the 520 Festival (Valentine's Day) to attract Chinese consumers pursuing high-end beauty products (Gao & Pan, 2022).

Based on the desire for uniqueness theory (Fromkin & Snyder, 1980), possessing a scarce product creates and communicates differentiation from others. Perceived scarcity serves as a driver of consumers' cognitive perceptions of luxury fashion NFTs (e.g., perceived uniqueness and perceived value). Luxury fashion brands can thus launch scarce NFTs to arouse consumers' perception of uniqueness. By launching marketing campaigns with scarce stimuli, such as NFT initiatives with limited-edition NFTs, luxury fashion NFTs can create a sense of uniqueness and desire among Chinese consumers. In other words, Chinese consumers who prefer owning something special that not every can have would perceive the limited-edition NFTs as unique. Besides, in this study, perceived uniqueness significantly influences the perceived value of NFTs, which further enhances purchase intention. Accordingly, marketers could emphasize the unique elements or characteristics of NFTs in their marketing programs and link uniqueness to the values that are important to consumers in their promotional campaigns. For example, embedding art elements into luxury fashion NFTs to show uniqueness. As each NFT is tokenized on a blockchain, creating a distinct digital certificate of ownership, each NFT is special and one of a kind. By combining with art elements, Chinese consumers take each NFT as collectibles with distinctive art elements. Thus, luxury fashion brands can enhance Chinese consumers' perceived

uniqueness from each NFT with art elements.

As perceived value has a mediating effect on the relationship between perceived uniqueness and purchase intention, luxury fashion marketers should focus on consumers' overall judgment of NFT value when using limited-quantity scarcity as a marketing strategy to promote their NFTs. Moreover, the personality of consumers is a critical issue to be considered in launching NFTs' marketing strategies in the Chinese market. Luxury fashion brands need to pay more attention to consumers who seek distinctiveness and prefer to show their differences from others. In addition, it is critical to ensure the ownership and copyright of these assets when tokenized as there could be potential dispute over intellectual property rights and copyright infringement.

Additionally, luxury fashion brands can offer a unique and one-of-a-kind NFT shopping experience for consumers to show off their limited-edition luxury fashion NFTs. Specifically, they should create a strong luxury fashion community on social and digital platforms, where buyers can communicate and share their shopping experiences. Strategic partnerships or collaborations with other companies, such as game companies, would further allow luxury fashion brands to create limited and special NFT avatars or images for consumers to enjoy a unique metaverse in a different way. Furthermore, consumers with a high need for uniqueness would perceive limited supply NFTs as unique and valuable and show more interest in purchasing them. As such, special limited-edition NFTs designed by famous artists who collaborate with luxury fashion brands can provide consumers a unique feeling and strengthen their intention to acquire NFTs as an art collection.

References

- Andy S. and Tian Z., (2022), "China's NFT market in 2022: The most comprehensive analysis guide", Retrieved from <https://www.enlybee.com/the-most-comprehensive-report-to-chinas-nft-market/> (Accessed 10 March 2022).
- Aztiani, D., Wahab, Z., and Andriana, I., (2019), "The effect of perceived quality, perceived price and need for uniqueness on consumer's purchase intention through online store of children import bag in Palembang, Indonesia", *International Journal of Scientific and Research Publications*, Vol. 9, No. 8, pp. 135-142.
- Ballina, J. F., and Ballina, I. D. L., (2019), "Scarcity as a desirable attribute of luxury fashion brands in millennial marketing", *Market Trziste*, Vol. 31, No. 2, pp. 153 - 170.
- Bsteh, S., and Vermeylen, F., (2021), "From Painting to Pixel: Understanding NFT Artworks", Retrieved from https://www.researchgate.net/profile/Sheila-Bsteh/publication/351346278_From_Painting_to_Pixel_Understanding_NFT_artworks/inks/609280ec92851c490fb7470e/From-Painting-to-Pixel-Understanding-NFT-artworks.pdf (Accessed 15 June 2021).
- Brock, T.C. (1968), "Implication of commodity theory for value change" in Greenwald, A.G, Brock, T.C. and Ostrom, T.M. (Eds.), *Psychological Foundations of Attitude*, Academic Press, New York, pp. 243-275
- Brock, T. C., and Mazzocco, P. J., (2004), "Responses to scarcity: a commodity theory perspective on reactance and rumination" in Rex A. W., Jeff G. and Sharon S. B.(Eds.),

- Motivational analyses of social behavior: Building on Jack Brehm's Contributions to Psychology*, Lawrence Erlbaum Associates, Inc., New Jersey, pp.129-148.
- Bodó, B., Giannopoulou, A., Quintais, J., and Mezei, P., (2022), "The rise of NFTs: these aren't the droids you're looking for", *European Intellectual Property Review*, Vol. 44, No. 5, pp. 265-282.
- Carnahan, M., (2022), "Global NFT adoption: Will awareness lead to increased ownership?" Retrieved from <https://coruzant.com/blockchain/global-nft-adoption-will-awareness-lead-to-increased-ownership/> (Accessed 15 June 2021).
- Carter, R., (2022), "The Ultimate List of NFT Statistics (2023)", Retrieved from <https://findstack.com/resources/nft-statistics/> (Accessed 30 December 2022).
- Chen, H. J., and Sun, T. H., (2014), "Clarifying the impact of product scarcity and perceived uniqueness in buyers' purchase behavior of games of limited-amount version", *Asia Pacific Journal of Marketing and Logistics*, Vol. 26 No. 2, pp. 232-249.
- Chen, T. Y., Yeh, T. L., and Wang, Y. J., (2020), "The drivers of desirability in scarcity marketing", *Asia Pacific Journal of Marketing and Logistics*, Vol. 33 No. 4, pp. 924-944.
- Chen, L., Qie, K., Memon, H., and Yesuf, H. M., (2021), "The empirical analysis of green innovation for fashion brands, perceived value and green purchase intention—mediating and moderating effects", *Sustainability*, Vol. 13, No. 8, pp. 4238.
- Chieng, F., Sharma, P., Kingshott, R. P., and Roy, R., (2022), "Interactive effects of self-congruity and need for uniqueness on brand loyalty via brand experience and brand attachment", *Journal of Product & Brand Management*, Vol. 31 No. 6, pp. 870-885.
- Chohan, R., and Paschen, J., (2021), "What marketers need to know about non-fungible tokens (NFTs)", *Business Horizons*, Vol. 66, No. 1, pp. 43-50.
- Cohen, J., Cohen, P., West, S. G., and Aiken, L. S., (2013), *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*, Lawrence Erlbaum Associates, Inc., London.
- Colicev, A., (2022). "How can non-fungible tokens bring value to brands", *International Journal of Research in Marketing*.
- Cronin, J. J., Brady, M. K., Brand, R. R., Hightower, R., and Shemwell, D. J., (1997), "A cross-sectional test of the effect and conceptualization of service value", *Journal of Services Marketing*, Vol. 40, No. 1, pp. 30-37.
- Cronin Jr, J. J., Brady, M. K., and Hult, G. T. M., (2000), "Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments", *Journal of Retailing*, Vol. 76, No. 2, pp. 193-218.
- Deraiya, R. (2022), "NFTs, Their Purpose, and How They Create Value. An overview of how Non-Fungible Tokens (NFTs) create value", Retrieved from <https://medium.com/coinmonks/nfts-their-purpose-and-how-they-create-value-95d0faa285ce> (Accessed 10 August 2022)
- Dodds, W.B., Monroe, K.B. and Grewal, D., (1991), "Effects of price, brand, and store information on buyers' product evaluations", *Journal of Marketing Research*, Vol. 28, No. 3, pp. 307–319.
- Douglas, S.P. and Craig, C.S., (2007), "Collaborative and iterative translation: An alternative approach to back translation", *Journal of International Marketing*, Vol. 15, No. 1, pp. 30-43.
- Dowling, M., (2022), "Fertile LAND: Pricing non-fungible tokens", *Finance Research Letters*, Vol. 44, pp. 102096.
- Franke, N., and Schreier, M., (2008), "Product uniqueness as a driver of customer utility in mass customization", *Marketing Letters*, Vol.19, pp. 93-107.
- Fromkin, H.L., (1970), "Effects of experimental aroused feelings of undistinctiveness upon valuation of scarce and novel experiences", *Journal of Personality and Social Psychology*, Vol.16, No. 3, pp. 521–529.

- Fromkin, H. L., and Snyder, C. R., (1980), "The search for uniqueness and valuation of scarcity" in Gergen, K. J., Greenberg, M. S. and Willis, R. H. (Eds.), *Social Exchange: Advances in Theory and Research*, Springer, Boston, pp. 57-75.
- Fowler, A., and Pirker, J., (2021), "Tokenfication-The potential of non-fungible tokens (NFT) for game development", *2021 Annual Symposium on Computer-Human Interaction in Play*, pp. 152-157.
- Gao, J and Pan, Y., (2022), "Balenciaga nfts and Louis Vuitton's Wechat Moments: How luxury brands made the most of 520 in China", Retrieved from <https://www.voguebusiness.com/consumers/balenciaga-nfts-and-louis-vuittons-wechat-moments-how-luxury-brands-made-the-most-of-520-in-china> (Accessed 1 June 2022).
- Gartner (2021), "Gartner Identifies Key Emerging Technologies Spurring Innovation Through Trust, Growth and Change", Retrieved from <https://www.gartner.com/en/newsroom/press-releases/2021-08-23-gartner-identifies-key-emerging-technologies-spurring-innovation-through-trust-growth-and-change> (Accessed 30 August 2021)
- Gierl, H., Plantsch, M., and Schweidler, J., (2008), "Scarcity effects on sales volume in retail", *The International Review of Retail, Distribution and Consumer Research*, Vol. 18, No. 1, pp. 45-61.
- Goldsmith, K., Griskevicius, V., and Hamilton, R., (2020), "Scarcity and consumer decision making: Is scarcity a mindset, a threat, a reference point, or a journey?", *Journal of the Association for Consumer Research*, Vol. 5, No. 4, pp. 358-364.
- Grewal, D., Krishnan, R., Baker, J., and Borin, N., (1998), "The effect of store name, brand name and price discounts on consumers' evaluations and purchase intentions", *Journal of retailing*, Vol. 74, No. 3, pp. 331-352.
- Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E., (2010), *Multivariate Data Analysis: A Global Perspective*, 7th ed., Pearson/Prentice Hall, Upper Saddle River, NJ.
- Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E., Sarstedt, M., Hopkins, L. and Kuppelwiser, V.G., (2014), "Partial least squares structural equation modeling (PLS-SEM): an emerging tool in business research", *European Business Review*, Vol. 26 No. 2, pp. 106-121.
- He, D., Liu, Z., Yang, Q., and Ma, L., (2022), "The Development of Digital Collection Platform under Responsible Innovation Framework: A Study on China's Non-Fungible Token (NFT) Industry", *Journal of Open Innovation: Technology, Market, and Complexity*, Vol. 8, No. 4, pp. 203.
- Henseler, J., Ringle, C. M., and Sarstedt, M., (2015), "A new criterion for assessing discriminant validity in variance-based structural equation modeling", *Journal of the Academy of Marketing Science*, Vol. 43, No. 1, pp. 115-135.
- Hofstetter, R., de Bellis, E., Brandes, L., Clegg, M., Lamberton, C., Reibstein, D., ... and Zhang, J. Z., (2022), "Crypto-marketing: How non-fungible tokens (NFTs) challenge traditional marketing", *Marketing Letters*, Vol. 33, No. 4, pp. 705-711.
- Huang, M. H., and Rust, R. T., (2018), "Artificial intelligence in service", *Journal of Service Research*, Vol. 21, No. 2, pp. 155-172.
- Jang, W. E., Ko, Y. J., Morris, J. D., and Chang, Y., (2015), "Scarcity message effects on consumption behavior: Limited edition product considerations", *Psychology & Marketing*, Vol. 32, No. 10, pp. 989-1001.
- Jordanoska, A., (2021), "The exciting world of NFTs: a consideration of regulatory and financial crime risks", *Butterworths Journal of International Banking and Financial Law*, Vol. 10, pp. 716.
- Kaczynski, S., and Kominers, S. D., (2021), "How NFTs Create Value", *Harvard Business Review*, <https://hbr.org/2021/11/how-nfts-create-value>.
- Katharina, B. (2022), "The Luxury Brands Selling Luxury NFTs", Retrieved from <https://www.statista.com/chart/26869/luxury-fashion-nfts/> (Accessed 30 March 2022)

- Kauppinen-Räsänen, H., Björk, P., Lönnström, A., and Jauffret, M. N. (2018), “How consumers’ need for uniqueness, self-monitoring, and social identity affect their choices when luxury brands visually shout versus whisper”, *Journal of Business Research*, Vol. 84, pp. 72-81.
- Kiliçaslan, F., and Ekizler, H., (2022), “Factors effecting purchase intention in blockchain and NFT(non-fungible token) technologies”, *Journal of Research in Business*, Vol. 7, No. 2, pp. 604–623.
- Kim, E. J., Choi, C., and Tanford, S., (2020), “Influence of scarcity on travel decisions and cognitive dissonance”, *Asia Pacific Journal of Tourism Research*, Vol. 25, No. 7, pp. 721-735.
- Kireyev, P., and Lin, R., (2021), “Infinite but Rare: Valuation and Pricing in Marketplaces for Blockchain-Based Nonfungible Tokens”, *INSEAD Working Paper*, No. 2021/60/MK T, <https://dx.doi.org/10.2139/ssrn.3737514>
- Kirjavainen, E. (2022), “The future of luxury fashion brands through NFTs”, Master’s Dissertation, Aalto University, <https://aaltodoc.aalto.fi/items/2b4b4694-ca06-4327-8906-6bbe5c3ebc75>
- Koch, O. F., and Benlian, A., (2015), “Promotional tactics for online viral marketing campaigns: how scarcity and personalization affect seed stage referrals”, *Journal of Interactive Marketing*, Vol. 32, No. 1, pp. 37-52.
- Kock, N., (2015), “Common method bias in PLS-SEM: A full collinearity assessment approach”, *International Journal of e-Collaboration*, Vol. 11, No. 4, pp. 1-10.
- KPMG, (2023), “Chinese consumers are eager to purchase luxury as a means of social advancement and self-differentiation”, Retrieved from <https://kpmg.com/cn/en/home/media/press-releases/2023/01/chinese-consumers-are-eager-to-purchase-luxury-as-a-means-of-social-advancement-and-self-differentiation-finds-kpmg-report.html> (Accessed 15 February 2023).
- Kugler, L., (2021), “Non-fungible tokens and the future of art”, *Communications of the ACM*, Vol. 64, No. 9, pp. 19-20.
- Kuo, Y. F., Wu, C. M., and Deng, W. J., (2009), “The relationships among service quality, perceived value, customer satisfaction, and post-purchase intention in mobile value-added services”, *Computers in Human Behavior*, Vol. 25, No. 4, pp. 887-896.
- Laycock, R., (2022), “NFT statistics and ownership for 2023”, Retrieved from <https://www.finder.com/nft-statistics> (Accessed 15 October 2022).
- Lee, C. T., Ho, T. Y., and Xie, H. H., (2023), “Building brand engagement in metaverse commerce: The role of branded non-fungible tokens (BNFTs)”, *Electronic Commerce Research and Applications*, Vol. 58, pp. 101248.
- Liddell, F., (2022), *The Crypto-Museum: Investigating the impact of blockchain and NFTs on digital ownership, authority, and authenticity in museums* (Publication No. 29330288), [Doctoral dissertation, University of Manchester], ProQuest Dissertations.
- Lynn, M., (1991), “Scarcity effects on value: A quantitative review of the commodity theory literature”, *Psychology & Marketing*, Vol. 8, No. 1, pp. 43-57.
- Lynn, M., and Harris, J., (1997), “The desire for unique consumer products: A new individual differences scale”, *Psychology & Marketing*, Vol. 14, No. 6, pp. 601-616.
- Melchers, (2022), “The city tier system in China and the rise in purchasing power among lower tier cities”, Retrieved from <https://www.melchers-china.com/posts/the-city-tier-system-in-china-and-the-rise-in-purchasing-power-among-lower-tier-cities/> (Accessed on 30 January 2023).
- Nicenکو, A., (2022), “Global NFT trading volume grows over 200% in 2022 surpassing \$50 billion, Retrieved from <https://finbold.com/global-nft-trading-volume-grows-over-200-in-2022-surpassing-50-billion/> (Accessed 30 April 2022).

- Okonkwo, I. E., (2021), “NFT, copyright and intellectual property commercialization”, *International Journal of Law and Information Technology*, Vol.29, No. 4, pp. 296-304.
- Phau, I., and Prendergast, G., (2000), “Consuming luxury brands: the relevance of the ‘rarity principle’”, *Journal of Brand Management*, Vol. 8, No. 2, pp. 122-138.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., and Podsakoff, N. P., (2003), “Common method biases in behavioral research: A critical review of the literature and recommended remedies”, *Journal of Applied Psychology*, Vol. 88, No. 5, pp. 879–903.
- Popescu, A. D., (2021), “Non-Fungible Tokens (NFT)–Innovation beyond the craze”, *Proceedings of Engineering & Technology (PET) in 5th International Conference on Innovation in Business, Economics and Marketing Research*, Vol. 66, pp. 26-30.
- Rae, M., (2021), *Analyzing the NFT mania: Is a JPG worth millions?* (Online), SAGE Publications: SAGE Business Cases Originals, <https://doi.org/10.4135/9781529779332>
- Rennie, E., Potts, J., and Pochesneva, A., (2019), “Blockchain and the Creative Industries: provocation paper”, RMIT University, DOI: <https://doi.org/10.25916/5dc8a108dc471>
- Rehman, W., e Zainab, H., Imran, J., and Bawany, N. Z., (2021), “Nfts: Applications and challenges”, *In 2021 22nd International Arab Conference on Information Technology (ACIT)*, pp. 1-7.
- Serada, A., Sihvonen, T., and Harviainen, J. T., (2021), “CryptoKitties and the new ludic economy: How blockchain introduces value, ownership, and scarcity in digital gaming”, *Games and Culture*, Vol. 16, No. 4, pp. 457-480.
- Shafiq, R., Raza, I., and Zia-ur-Rehman, M., (2011), “Analysis of the factors affecting customers’ purchase intention: The mediating role of perceived value”, *African Journal of Business Management*, Vol. 5, No. 26, pp. 10577.
- Shi, X., Li, F., and Chumnumpan, P., (2020), “The use of product scarcity in marketing”, *European Journal of Marketing*, Vol. 54, No. 2, pp. 380-418.
- Sestino, A., Guido, G., and Peluso, A. M., (2022), *Non-Fungible Tokens (NFTs): Examining the Impact on Consumers and Marketing Strategies*, Palgrave Macmillan Cham, Switzerland.
- Scholz, J., and Duffy, K., (2018), “We are at home: How augmented reality reshapes mobile marketing and consumer-brand relationships”, *Journal of Retailing and Consumer Services*, Vol. 44, pp. 11-23.
- Snyder, C.R., (1992), “Product scarcity by need for uniqueness interaction: a consumer catch-22 carousel”, *Basic & Applied Social Psychology*, Vol. 13, No. 1, pp. 9–24.
- Song, D., and Lee, J., (2013), “Balancing “we” and “I”: Self-construal and an alternative approach to seeking uniqueness”, *Journal of Consumer Behaviour*, Vol. 12, No. 6, pp. 506-516.
- Sung, E., Kwon, O., and Sohn, K., (2023), “NFT luxury brand marketing in the metaverse: Leveraging blockchain-certified NFTs to drive consumer behavior”, *Psychology & Marketing*, Vol. 40, No. 11, pp. 2306-2325.
- Tan, H., (2021), “Luxury brands like Burberry and Coach are cashing in on Singles’ Day shopping in China by creating limited edition NFTs for the event”, Retrieved from <https://www.businessinsider.com/singles-day-limited-edition-nft-china-luxury-brands-2021-11> (Accessed 3 January 2022).
- Trautman, L. J., (2022), “Virtual art and non-fungible tokens”, *Hofstra Law Review*, Vol. 50, No. 2, pp. 361-426.
- Tynan, C., McKechnie, S., and Chhuon, C., (2010), “Co-creating value for luxury brands”, *Journal of Business Research*, Vol. 63, No. 11, pp. 1156-1163.
- Tong, A., (2022), “Non-fungible Token, Market Development, Trading Models, and Impact in China”, *Asian Business Review*, Vol. 12, No. 1, pp. 7-14.

- Tian, K. T., Bearden, W. O., and Hunter, G. L., (2001), "Consumers' need for uniqueness: Scale development and validation", *Journal of Consumer Research*, Vol. 28, No. 1, pp. 50-66.
- Urbina, S. D. C., Stamatogiannakis, A., and Goncalves, D., (2021), "Consumers' choices between products with different uniqueness duration", *European Journal of Marketing*, Vol. 55, No. 13, pp. 148-176.
- Valeonti, F., Bikakis, A., Terras, M., Speed, C., Hudson-Smith, A., and Chalkias, K., (2021), "Crypto collectibles, museum funding and OpenGLAM: challenges, opportunities and the potential of Non-Fungible Tokens (NFTs)", *Applied Sciences*, Vol. 11, No. 21, pp. 9931.
- Verhallen, T.M. and Robben, H.S.J., (1994), "Scarcity and preference: An experiment on unavailability and product evaluation", *Journal of Economic Psychology*, Vol. 15, No. 2, pp. 315-331.
- Vigna, P., (2022), "NFT sales are flatlining: is this the beginning of the end of NFTs?", Retrieved from <https://www.wsj.com/articles/nft-sales-are-flatlining-11651552616> (Accessed 30 May 2022).
- Wang, Q., Li, R., Wang, Q., and Chen, S., (2021), "Non-fungible token (NFT): Overview, evaluation, opportunities and challenges", Retrieved from https://www.researchgate.net/publication/351656444_Non-Fungible-Token-NFT-Overview-Evaluation-Opportunities_and_Challenges (Accessed 10 October 2022).
- Wiedmann, K. P., Hennigs, N., and Siebels, A., (2009), "Value-based segmentation of luxury consumption behavior", *Psychology & Marketing*, Vol. 26, No. 7, pp. 625-651.
- Wright, R. A., Greenberg, J., and Brehm, S. S., (2004), *Motivational Analyses of Social Behavior: Building on Jack Brehm's Contributions to Psychology*. Lawrence Erlbaum Associates, New Jersey.
- Wu, C. and Hsing, S.S., (2006), "Less is more: How scarcity influences consumers' value perceptions and purchase intents through mediating variables", *Journal of American Academy of Business*, Vol. 9, No. 2, pp. 125-132.
- Wu, P. C., and Lo, W. K., (2017), "Effects of product scarcity: The mediating role of consumer need for uniqueness and conformity", *International Journal of Business Environment*, Vol. 9, No. 1, pp. 34-50.
- Wu, W. Y., Lu, H. Y., Wu, Y. Y., and Fu, C. S., (2012), "The effects of product scarcity and consumers' need for uniqueness on purchase intention", *International journal of consumer studies*, Vol. 36, No. 3, pp. 263-274.
- Xu, C., (2022), "How Does China View NFTs and What Are its Market Prospects? China Briefing", Retrieved from <https://www.china-briefing.com/news/how-does-china-view-nfts-and-what-are-its-market-prospects/> (Accessed 15 May 2022).
- Yang, L., Wang, Z., and Hahn, J., (2020), "Scarcity strategy in crowdfunding: An empirical exploration of reward limits", *Information Systems Research*, Vol. 31, No. 4, pp. 1107-1131.
- Zhu, M., and Ratner, R. K., (2015), "Scarcity polarizes preferences: The impact on choice among multiple items in a product class", *Journal of Marketing Research*, Vol. 52, No. 1, pp. 13-26.