

Investigating the Effects of Art Product's NFT Characteristics on Purchase Intention for Self and Others

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Abstract

A research model was developed in this study from previous research to illustrate the relationship among perceived scarcity, assumed expensiveness of art products, perceived functional value, perceived symbolic value as well as purchase for self and others. 639 valid cases who have experienced NFT art products have been collected for data analyses. The R software has been chosen for analysis. The results have revealed that perceived scarcity was positively related to perceived functional value and perceived symbolic value, but it was assumed that the expensiveness of art products was not significantly related to perceived functional value or perceived symbolic value. Moreover, functional value was significantly related to the purchase intention of both self and others, while symbolic value only was significantly affected by the purchase intention of others. The results of this study have provided managerial implications for future studies.

Keywords: *Perceived Scarcity, Assumed Expensiveness of Art Product, Perceived Functional Value, Perceived Symbolic Value, Purchase Intention*

1. INTRODUCTION

With the outbreak of COVID-19, people are required to keep social distance, and the main integrated channels of most service have been changed from offline to online environments. Because of the development of un-tact service, non-fungible tokens (hereinafter referred as NFTs) have been introduced into the market. NFTs are a new method of trading art ownership, which are a digital certificate for the ownership of physical and virtual assets using data from certificates stored on a blockchain to ensure asset scarcity and irreplaceability [1]. Therefore, NFTs offer a new opportunity to regenerate the industry.

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NFT art trading relies on the high security, freedom of distribution, transaction transparency and user anonymity of blockchains to solve long-term problems in the art market, such as artist privacy protection, copyright protection, artist income enhancement, financial diversification and the popularization of art [2]. Because of technological characteristics, previous studies have revealed that NFT art products have scarcity [3], which, meanwhile, have illustrated that the perceived product scarcity could enhance consumers' perceived product value, which then indirectly influence their purchase intention [4, 5].

From the aspect of consumer perception, it has been determined in previous studies that consumers show an assumed perception of expensiveness for art products [6]. Due to the limitations of NFT products, related studies have also revealed that assumed expensiveness positively influences consumers' perceived value and purchase behavior [7, 8]. Following these studies, it is critical to illustrate how the characteristics of NFT art products impact consumers' perceived value, which then influences their purchase behavior.

As the popularity of NFTs has increased, NFT-related research has been conducted in a number of fields. First of all, NFT artifacts have focused on ecosystem structural components and theoretical backgrounds [2, 9]. These studies have drawn their attention to NFTs consisting of components from the ecosystem perspective. Secondly, attention has been paid to the technology perspective in NFT-related studies, which illustrate the technology standardization to support the NFT service [10]. However, there is almost no study identifying the relationship between NFT art products and consumer behavior. Even if some studies have identified the perceived scarcity characteristics of NFTs [4, 5], it is assumed that the expensiveness of art products positively influences consumers' perceived value [8]. Moreover, in most previous studies, perceived value is considered as one dimension, in few of which has the effect of the characteristics of NFTs on both functional and symbolic value been investigated. In addition, almost of no studies have illustrated differences in the purchase intention of self and others.

In order to fill the gaps in the previous studies, the purpose of this study is to explore the relationship among consumers' perceived scarcity, assumed expensiveness of art, perceived functional value, perceived symbolic value and the purchase behavior of self and others. The results of this study could provide theoretical implications for studies on NFTs and managerial implications for NFT managers.

2. THEORETICAL BACKGROUND AND HYPOTHESESE DEVELOPMENT

2.1 Perceived Scarcity and Perceived Value

Following the perspective of modern economics, all the free goods are scarce because the demand and supply are inconsistent. Meanwhile, scarcity has been explained as the foundation of modern economics [11]. According to this perspective, we could explain all the subjects in the nature and human society with the characteristic of scarcity. Based on previous studies, NFT products also have this characteristic [3], and marketers are encouraged to promote the perception of scarcity to exploit consumers' desire to own scarce resources [12]. Therefore, we could argue that NFT artworks also have scarcity perceived by consumers, and that the perceived scarcity of NFT artworks could be explained as a gap between the finite resources and infinite demand of NFT art products.

It has been found in lots of previous studies that perceived scarcity positively affects consumers' perceived value. [13] Studies have illustrated that scarcity provides different value cues from contextual information, which can lead consumers to pay high attention to their needs while ignore contextual cues. In art-market-related studies, scarcity also proves a fundamental characteristic of art products [14], and the positive effect of

perceived scarcity can improve the valuation of artworks [15]. Meanwhile, previous studies have revealed that the number of artworks, copyrights and art accessibility affect the art product scarcity perceived by consumers in the art market. These limitations may positively influence their perceived value [16].

Based on these studies, the following hypotheses are put forward:

Hypothesis 1a: Perceived scarcity has a positive effect on perceived functional value

Hypothesis 1b: Perceived scarcity has a positive effect on perceived symbolic value

2.2 Assumed Expensiveness of Art and Perceived Value

Consumers have the preference for assessing the value of products using assumed expensiveness [17]. According to previous studies, assumed expensiveness differs from the actual prices of products, which is formed by consumers' estimates of products that are not objectively meaningful but may contain many cognitive biases [18]. Art products also have the characteristic of assumed expensiveness. Based on the art infusion theory, it is argued that the implantation of artistic elements into a product and the perception of a product could be transferred to the product. According to [1] among the various sectors of NFTs, the art sector offers relatively high transaction prices. To explain this phenomenon, in this study, the assumed expensiveness is defined as the perception of a high price of art formed by consumers' experience and knowledge.

Studies on retailing, service and psychologists have shown that assumed expensiveness has positive effect on consumers' perceived value, perceived quality and perceived status [7, 8]. In previous studies, it is also revealed that consumers' perceptions of artworks also influence their evaluation of related products and consumption behavior based on the art infusion theory [19]. In other studies, whether the existence of art differences impacts consumers' perceived value of products has been evaluated [20]. Thus, we could argue that assumed expensiveness is positively related to consumers' perceived value.

Hypothesis 2a: Assumed Expensiveness of Art has a positive effect on perceived functional value

Hypothesis 2b: Assumed Expensiveness of Art has a positive effect on perceived symbolic value

2.3 Perceived Value and Purchase Intention

Consumers' perceived value is usually regarded as perceived by consumers, which reflects the result of subjective judgments and helps to explain consumer behavior at both economic and emotional level [21]. Meanwhile, perceived value has been verified as an important factor for increasing consumer satisfaction, purchase intention and loyalty [22]. Consumer's perceived functional value and perceived symbolic value of NFT artworks can positively influence their purchase intention of NFT artworks. Purchase intention implies the likelihood that a consumer will purchase a product or service [23]. Previous studies have verified the positive causal relationship between perceived value and purchase intention [24], according to the results of which there are clear differences in the effect of consumer perceptions on different purchase intention types [25]. Thus, the following hypotheses are formulated:

Hypothesis 3a: Perceived functional value has a positive effect on purchase intention for self

Hypothesis 3b: Perceived symbolic value has a positive effect on purchase intention for self

Hypothesis 3c: Perceived functional value has a positive effect on purchase intention for others

Hypothesis 3d: Perceived symbolic value has a positive effect on purchase intention for others

Based on the previous studies, the Figure 1 presented the research model of this study.

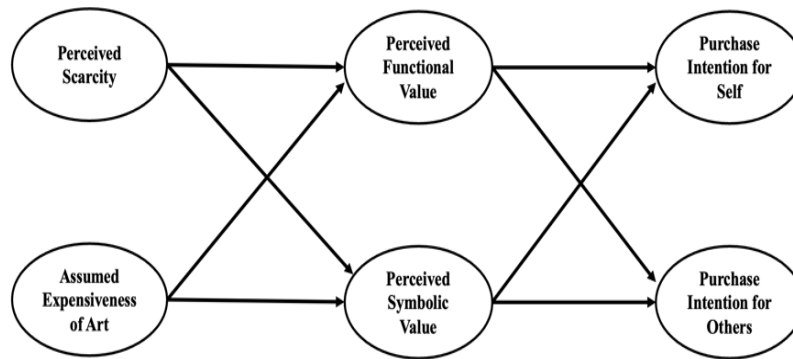


Figure 1 Research Model

3. METHOD

3.1 Measurement Development

A quantitative research approach was employed in this study to illustrate consumers’ NFT art product purchase behavior. The measurement items based on previous studies were related to studies on scarcity and assumed expensiveness. The measurement scale for variables was derived from previous studies, from which 4 items were adopted to measure scarcity [26, 27]. The assumed expensiveness was measured with 4 items derived from [28]. The symbolic value and functional value were measured with 4 items derived from [29]. The purchase intention of self and others was measured with 3 items derived from previous studies [30]. The purchase intention of self refers to consumers’ intent to buy NFT art for themselves. On the other hand, the purchase intention of others refers to consumers’ intent to buy NFT art for others as gifts. All the items were measured with a seven-point Likert scale (strongly disagree to strongly agree). All of the measurement items are shown in Table 1, where the respondents’ demographic characteristics (gender, age, education and monthly income) are included.

All of the items were first developed in English literatures. 2 bilingual Chinese researchers in the field of consumer behavior helped to translate the survey items into Chinese and back-translated them into English to ensure the equivalence of meanings. Meanwhile, a pre-study was conducted for this study to confirm whether the measurement was easily understood.

3.2 Data Collection and Sample Characteristics

For data collection, a web-based survey was conducted using an internet survey platform. Regarding the survey, a QR image containing a brief explanation of the purpose of this study was distributed to people who had experience with NFTs. In the first part of this survey, the purpose of this research was sufficiently explained, and this page was designed in a way that only voluntary participants could respond to the questionnaire. Each participant could earn RMB 5 as incentive for their contribution to this research. Considering the characteristics and purpose of this research, clear questionnaire was used in this study to select

target consumers, which was “Have you ever known or used NFTs?”. Only participants who answered “Yes” would have the chance to answer the following questionnaire. The survey was conducted during the period of 1/20 to 1/29, 2022. 639 valid samples had been obtained through the survey in this study, which were considered suitable for an empirical analysis, and insincere responses were excluded. There were 321 female respondents (50.2%), whose proportion was higher than that of the 318 male respondents (49.8%). The number of members in the age group of younger than 20 years old was 299 (46.8%), taking a large proportion, followed by the age group of 20 years old~30 years old, which was 275 (43%), then came the group of 30 years old ~ 40 years old, which was 28 (4.4%) and finally the group of over 50, which was 37 (5.8%). Bachelor respondents were dominant, whose number was 460 (72%) compared to that of graduate respondents, which was 123 (19.2%), 44 (6.9%) were undergraduates, followed by those with only high-school education, whose number was 12 (1.9%). Monthly income of ‘Chinese RMB 5000-10000’ was earned by 275 of them (43%), followed by those earning ‘Chinese RMB 10000-20000’, whose number was 176 (27.5%), then came those earning ‘Chinese RMB 2000-5000’, whose number was 83 (13%), those earning ‘Chinese RMB of up to 2000’, whose number was 30 (4.7%), and finally those earning ‘Chinese RMB of over 30000’, whose number was 29 (4.5%). In terms of occupation, 227 (35.5%) of the respondents were researchers, followed by civil servers, whose number was 198 (31%), students, whose number was 61 (9.5%), civil servants, whose number was 57 (8.9%), others, whose number was 39 (6.1%), individual households, whose number was 31 (4.9%), server, whose number was 24 (3.8%) and the unemployed, whose number was 2 (0.3%).

4. RESULTS

4.1 Measurement Model

An exploratory factor analysis (EFA) was conducted using a principal component analysis and the varimax rotation method, whose results determined the factors of this research model. Out of a total of 22 developed items, 19 were retained and 6 were generated after removing and excluding items that presented low factor loadings (<0.5) [31]. As shown in Table 1, all of the Cronbach's α value was higher than the suggested acceptable value 0.7, which indicated the adequacy of this EFA.

To confirm the accuracy of the measurement model, the convergent validity and discriminant validity of the constructs as well as the reliability of all the multiple items were examined. First of all, the indicator reliability of the constructs was confirmed by assessing the factor loading, which showed that all the values were statistically significant and higher than the minimum acceptable value 0.7 [32]. Based on the value of factor loading, the AVE (average variance extracted) and CR (composite reliability) score of all the constructs were calculated, as shown in Table 1. Convergent validity was assessed by looking at the AVE value and factor loading value, which were higher than 0.5, so as to decide whether any indicator was suitable for deletion [33]. Meanwhile, according to [34], it was argued that AVE values of more than 0.4 were also acceptable. All the indicators' factor loading values were higher than the threshold of 0.5. Except for the perceived exclusiveness (AVE = .446) and functional value (AVE = .463) of constructs, all other AVE values were above 0.5. Thus, all the constructs showed an acceptable convergent validity. Then the CR value of each construct was the measurement of the internal consistency of each indicator. Based on previous studies, a CR value of above 0.7 indicated a strong composite reliability [32]. All the CR values in this study exceeded the suggested guideline of 0.7, which indicated a good reliability.

Table 1. Results of Exploratory Factor Analysis

Construct	Items	Factor Loading	Cronbach's α	CR	AVE
Scarcity (SC)	SC1: NFT art is exclusive	.786	.842	.704	.446
	SC2: NFT art is extravagant	.815			
	SC3: NFT art is unique	.791			
	SC4: Few people can own NFT art	.780			
Assumed Expensiveness of Art (EX)	EX1: The price of the NFT art is expensive	.669	.694	.842	.572
	EX3: Compared to the general production, NFT art is more experience	.588			
	EX4: What I would expect to pay for NFT art is high	.785			
Functional Value (FV)	UV2: NFT art as virtual token has correct/accurate attributes	.690	.672	.713	.463
	UV3: NFT art as virtual token has appropriate outcomes	.788			
	UV4: NFT art's transaction phrase consistent with functional value creation	.738			
Symbolic Value (SV)	SV1: Own the NFT art can enhances my self-images to others	.804	.787	.790	.557
	SV2: Own the NFT art can improves the way I am perceived	.776			
	SV4: Own the NFT art is a symbol of my social status	.638			
Purchase Intention for Self (SP)	SP1: How likely are you to buy yourself a NFT art to celebrate a special occasion	.813	.874	.878	.708
	SP2: How likely are you to buy yourself a NFT art to feel better	.754			
	SP3: How likely are you to buy yourself a NFT art: to treat yourself	.824			
Purchase Intention for Others (OP)	OP1: How likely are you to offer NFT art as gifts to celebrate a special occasion	.835	.876	.881	.716
	OP2: How likely are you to give NFT art as gifts to please others	.810			
	OP3: How likely are you to buy a NFT because they make good gifts	.834			

Then the discriminant validity was conducted in this study. To assess discriminant validity, the square root of AVE value was compared with the correlation value among different constructs. If the square root of AVE on the diagonal was higher than the correlation value, it indicated that the construct was different with others. As shown in Table 2, all the square roots of AVE were higher than the correlation value, suggesting a good discriminant validity.

Table 2. Discriminant Validity

	EX	SC	FV	SV	SP	OP
EX	.7561					
SC	.656	.669				
FV	.433	.658	.680			
SV	.430	.563	.530	.745		
SP	.290	.536	.473	.596	.841	
OP	.189	.389	.293	.554	.679	.846

Goodness-of-Model-Fit: $\chi^2=413.316$; $\chi^2/df=3.02$; RMR = 0.083; GFI = 0.931; CFI = 0.952; NFI = 0.931; RMSEA = 0.056

Note1: Diagonally Values (Italic) are the square root of the AVE for each construct

EX = Assumed Expensiveness of Art; SC = Scarcity; FV = Functional Value; SV = Symbolic Value; SP = Purchase Intention for Self; OP= Purchase Intention for Others

4.2 Structural Model

Next, structural equation modeling (SEM) was conducted. The proposed model provided a satisfactory model fit to the data ($\chi^2=441.282$; $\chi^2/df=3.11$; RMR = 0.055; GFI = 0.927; CFI = 0.948; NFI = 0.926;

RMSEA = 0.057), as shown in Table 3, in which the results of SEM are also summarized. Scarcity was positively and significantly associated with functional value and symbolic value ($\beta_{SC-FV} = 0.597$, $t = 7.244$, $p < 0.01$; $\beta_{SC-SV} = 0.776$, $t = 7.892$, $p < 0.01$), but the assumed expensiveness of art was significantly related to neither functional value nor symbolic value. Both functional value and symbolic value had a significant and positive impact on the purchase intention of self ($\beta_{FV-SP} = 0.431$, $t = 4.736$, $p < 0.01$; $\beta_{SV-SP} = 0.553$, $t = 9.490$, $p < 0.01$), and only symbolic value significantly affected the purchase intention of others ($\beta_{SV-OP} = 0.685$, $t = 10.079$, $p < 0.01$), which, while, was not significantly affected by functional value.

Table 3. Direct paths for structural model

Path	Estimate (β)	z-value	p	
EX→FV	-.049	-.914	.361	Reject
SC→FV	.597	7.244	.000	Support
EX→SV	-.001	-.019	.985	Reject
SC→SV	.776	7.892	.000	Support
FV→SP	.431	4.736	.000	Support
SV→SP	.553	9.490	.000	Support
FV→OP	.054	.568	.579	Reject
SV→OP	.685	10.079	.000	Support

Goodness-of-Model-Fit: $\chi^2=441.282$; $\chi^2/df=3.11$; $RMR = 0.055$; $GFI = 0.927$; $CFI = 0.948$; $NFI = 0.926$; $RMSEA = 0.057$

EX = Assumed Expensiveness of Art; SC = Scarcity; FV = Functional Value; SV = Symbolic Value; SP = Purchase Intention for Self; OP= Purchase Intention for Others

5. DISCUSSION

This study simultaneously addressed the structural relationship among scarcity, assumed expensiveness of art, function value, symbolic value as well as the purchase intention of self and others. First of all, this study unveiled an interesting insight into NFT art products that comprise the characteristics of NFT products. It was observed that the characteristics of NFT art products could be theoretically explained with scarcity and assumed expensiveness of art. Secondly, this study confirmed the relationships among these variables in the context of NFT art products. One significant finding related to the relationship among scarcity, perceived functional value and perceived symbolic value was consistent with previous studies [7, 8, 16, 25]. It was revealed that the scarcity of NFT art products could enhance consumer's perceived functional value and symbolic value towards the NFT products. According to these results, the scarcity characteristic of NFTs could improve consumers' positive attitude and behavior. However, the art infusion theory was not investigated in this study, which argued that art products would directly or indirectly enhance product perceived value [19, 35]. These results offered several theoretical and practical implications.

6. CONCLUSION AND IMPLICATIONS

6.1 Theoretical Implications

This study illustrated consumer behavior towards NFT art products, in which the previous theories were extended, and the scarcity theory as well as art infusion theory was applied to build a research model and develop hypotheses [3]. Previous studies have only been focused on the scarcity theory to illustrate the effect of perceived scarcity on the product value perceived by consumers, which then influenced their behavior. While other art-related studies have drawn on the art infusion theory to investigate the effect of art infusion on enhancing the value of products to improve consumers' perceived value and positive behavior [7, 8]. In this study, the scarcity theory has been combined with the art infusion theory to extend an integrated model to reveal more specific value perceived by consumers and their purchase behavior. We have also extended

consumers' purchase behavior. In most previous studies, only consumers' purchase behavior was investigated. In almost no studies has consumers' differential purchase behavior been identified, that is, purchase for themselves and others. Based on the results of this study, functional value had more effect on consumers' purchase behavior while they were purchasing for themselves. Other the hand, symbolic value played a more critical role in consumers' purchase behavior while they were purchasing for others.

6.2 Practical Implications

Based on the results, this study could develop several practical implications for NFT marketing managers as follow. This study found that only consumer perceived scarcity has significant effect on consumer perceived value, while assumed expensiveness of art did not play significant effect on consumer perceived value. Thus, marketing manager need to emphasize the product scarcity to enhance consumer perceived value about the NFT products. While marketer did not need to pay more attention on assumed expensiveness of art information transfer to consumer. Following these results, NFT marketer need to pay their attention on how to emphasize the NFT product scarcity. Such as, marketer could use words like "limited or special edition" to awareness consumer perceived scarcity about the product. Based on the results, functional value has significant effect on consumer personal purchase behavior, while has no effect on consumer purchase behavior for others. When consumer purchase product for themselves, they pay their attention to usefulness of product. Consumer purchase NFT product perform the same behavior when they purchase for themselves. They consider the monetary value and function value than the symbolic value, which could assist them to self-presentation. However, NFT symbolic image has more effect on consumer purchase it as gits for others. These results revealed that NFT marketer need to play concentrated marketing strategies focus on differential purchase motivation segments.

6.3 Limitations

Despite these theoretical and practical contributions, the current study still has several limitations. First of all, the moderation effect of art types was not considered in this study. According to previous studies, the type of art may have influence on consumers' attitude and perceived value of NFT products, which then affects their behavior or behavioral intention [19]. Secondly, the research model of this study was not developed from existing extensive theoretical frameworks to support the relationship. In future studies, we need to apply some solid frameworks and build more established models to explain the integrated relationship. Lastly, the research samples of this study were limited only to consumers who had experience with NFT art products. In future studies, attention needs to be paid to consumers who have other types of needs or behavioral patterns in the stages of consumers' decision-making process.

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