



Print ISSN: 1738-3110 / Online ISSN 2093-7717
 JDS website: <http://accesson.kr/jds>
<http://doi.org/10.15722/jds.23.09.202509.127>

The Effects of Airline NFT Art Characteristics on Perceived Value and Purchase Intention

Sung-Sook AHN¹, Sang-A PARK²

Received: June 05, 2025. Revised: July 05, 2025. Accepted: September 05, 2025.

Abstract

Purpose: This study examines how scarcity, trustworthiness, aesthetic appeal, and experiential quality of airline-issued non-fungible token (NFT) art influence consumers' perceived value and purchase intention, with NFT purchase purpose (investment vs. non-investment) as a moderating variable. **Research design, data, and methodology:** A survey was conducted with 247 consumers familiar with NFTs, and structural equation modeling (SEM) was used to test the hypothesized relationships. Multi-group SEM was applied to evaluate moderating effects. **Results:** All four NFT attributes significantly enhanced perceived value, which in turn positively affected purchase intention. Scarcity influenced perceived value only among investment-oriented consumers, whereas trustworthiness, aesthetics, and experiential quality were significant in both investment and non-investment groups. **Conclusions:** The findings advance theoretical understanding of value-creation mechanisms in Web3-based distribution and provide practical insights for airlines developing NFT strategies. Specifically, tailoring NFT offerings to consumer motives—investment versus non-investment—can improve adoption and engagement.

Keywords: Airline NFT Art, Digital Distribution, Service Distribution Innovation, Perceived Value, Purchase Intention, NFT Purchase Purpose

JEL Classification Code : C46, L10, L84

1. Introduction

Non-Fungible Tokens (NFTs), which authenticate digital asset ownership via blockchain technology, have rapidly expanded across industries including art, music, gaming, and real estate. Public attention peaked in 2021 when American artist Beeple's digital artwork sold for approximately \$69.3 million, contributing to a surge in global NFT transaction volume to \$17.6 billion—over 200

times the previous year's figure (Bellagarda & Abu-Mahfouz, 2022). However, since late 2022, the market has entered a correction phase, marked by sharp declines in trading activity and growing skepticism regarding NFTs' long-term utility and sustainability (Horky et al., 2023). Consequently, understanding consumers' perceived value and motivation for adopting NFTs has become increasingly critical.

1 First Author, Assistant Professor, College of Economics & Business Administration, Cheongju University, Cheongju, South Korea. Email: ssahn@cju.ac.kf

2 Corresponding Author, Visiting Professor, Mandakh University, Ulaanbaatar, Mongolia. Email: servicedesigner@ehwa.ac.kr

© Copyright: The Author(s)

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted noncommercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Within this broader context, NFTs are emerging as a novel digital distribution asset with implications for marketing and consumer engagement in the airline industry. For example, Japan's ANA launched the first NFT marketplace featuring aviation-themed digital assets such as aircraft photos and 3D models, while Lufthansa introduced the "Uptrip" NFT membership program in 2023, offering tangible rewards including lounge access and free in-flight Wi-Fi (Hayward, 2023). These initiatives illustrate NFTs' potential as a service distribution innovation strategy. Yet, scholarly research on consumer responses to airline NFTs remains limited.

Consumer adoption of NFTs is shaped not only by technical aspects but also by perceived value, encompassing psychological, functional, and social dimensions (Holbrook, 1999; Zeithaml, 1988). Prior studies have primarily examined NFT adoption in art (Eastman et al., 2024), gaming (Choi et al., 2021), and finance (Kim, 2022), often using the Technology Acceptance Model (TAM). However, TAM offers limited explanatory power in service-oriented contexts, especially where value perceptions directly influence purchase decisions.

Accordingly, this study investigates how key attributes of airline-issued NFT art—scarcity, trustworthiness, aesthetic appeal, and experiential quality—shape perceived value and purchase intention. It also examines the moderating role of purchase purpose (investment vs. non-investment). By linking consumer behavior theories with blockchain-based service assets, the study contributes theoretically to digital distribution literature and provides practical guidance for airlines seeking to design effective NFT strategies.

2. Literature Review

2.1. Perceived Value Theory

Perceived value refers to the overall judgment that consumers make by comparing the benefits they receive from a product or service to the costs they incur to obtain it (Zeithaml, 1988). More specifically, consumers perceive a high value when they believe that the benefits they receive exceed their investments, whether monetary, temporal, or effort-based. This concept has been widely applied in marketing and consumer behavior literature. It consists of multiple dimensions, including functional (utility and quality), monetary (value for money), social (image or status conveyed to others), and emotional value (psychological satisfaction) (Sweeney & Soutar, 2001). Likewise, Kim and Lee (2021) demonstrated that customer value dimensions significantly affect purchase intention in digital distribution environments, such as online shopping malls. In the context

of airline services, consumers' overall perceived value is shaped not only by functional benefits such as safety and time savings but also by social values, including elite membership status and favorable brand image.

Applying the perceived value framework to NFT-based airline services underscores the need to identify the additional benefits blockchain-issued airline tickets or membership NFTs provide to consumers. For instance, the Argentinian airline Flybondi has introduced a service that issues flight tickets as NFTs, allowing consumers to freely transfer or resell their tickets to others (Folgieri et al., 2023). This feature offers additional flexibility, enabling consumers to perceive greater value than traditional airline tickets. Ultimately, consumers are more likely to perceive NFT-based services as valuable and prefer them when the perceived benefits (e.g., ease of transaction and collectability due to scarcity) are high and perceived sacrifices (e.g., extra costs and learning curve) are low. A recent study on NFT consumers found that higher perceived benefits significantly increased consumers' intention to purchase NFTs (Fortagne & Lis, 2024). This implies that the more clearly airlines can deliver tangible benefits through NFT applications, the more positively consumers will respond to such services.

2.2. Hedonic Consumption and Experiential Value Theory

Hedonic consumption theory emphasizes consumers' emotional needs and experiential value, offering a useful lens for understanding responses to airline NFT art services in digital service distribution. Holbrook and Hirschman (1982) examined consumption from an experiential perspective, establishing a foundation for subsequent theories of experiential marketing and the experience economy (Pine & Gilmore, 2011). Building on this, Babin et al. (1994) distinguished between utilitarian and hedonic value in shopping, showing that enjoyment and playfulness—beyond functional acquisition—significantly influence consumer satisfaction. This underscores the role of emotional enjoyment in everyday consumption, particularly in omnichannel service environments.

Similarly, Mathwick et al. (2001) demonstrated that experiential value—capturing fun, aesthetics, playfulness, and service excellence—strengthens customer loyalty in online shopping. More recently, Artusi et al. (2025) highlighted that digital innovations in service distribution enhance experiential value and customer satisfaction, especially in omni-channel settings. These findings collectively suggest that enjoyment, immersion, and aesthetic appeal are central to consumer value formation in digitally mediated services such as NFTs.

NFT-based art experiences inherently function as experiential goods, providing pleasure and satisfaction through ownership and self-expression. Emotional responses and symbolic meaning therefore represent key success factors. Evidence from the Korean airline industry shows that consumers respond positively to artistic marketing initiatives, primarily because of the enjoyment and novelty these services provide (Wu, Li, & Li, 2018). Delivered through nontraditional digital distribution channels such as NFT platforms, these experiences integrate art, service, and digital access. Thus, the greater the hedonic value perceived from airline NFT art, the higher the expected satisfaction, service usage intention, and loyalty (Babin et al., 1994; Hirschman & Holbrook, 1982). In turn, hedonic value fosters consumer engagement within digital distribution ecosystems, where experiential elements critically shape loyalty and channel preferences.

2.3. Social Exchange Theory

Airline NFT-based services can also be interpreted through the lens of social exchange theory. This perspective frames human interactions as economic exchanges in which individuals seek to maximize rewards while minimizing costs (Blau, 1964; Homans, 1958). Relationships are maintained or strengthened when perceived benefits outweigh associated costs.

In marketing, social exchange theory has been widely applied to firm–consumer relationships, particularly in loyalty programs and membership services. For example, consumers exchange personal data and repeated purchases for benefits such as mileage rewards or bonuses. When the exchange is perceived as fair, consumers are more likely to remain loyal (Cropanzano & Mitchell, 2005). Hajli (2015) and Lu et al. (2016) further illustrate how trust and reciprocity shape long-term customer relationships in digital service contexts.

Recent evidence underscores its relevance for online distribution: Wu and Huang (2023) found that social value perception significantly enhanced trust and purchase intention in digital channels. This implies that consumers' willingness to adopt airline NFTs depends on whether the exchange is perceived as equitable—i.e., whether rewards such as exclusivity, access, or aesthetic value outweigh costs such as price, learning effort, or technological risk. Maintaining favorable exchanges is therefore central to the successful diffusion of NFT-based airline services.

2.4. Value-Based Adoption Model (VAM)

The value-based adoption model (VAM) provides a useful framework for exploring the adoption of innovative airline services such as NFTs, particularly within the scope

of digital content and service distribution. VAM is an integrative model that highlights perceived value as the decisive factor in a consumer's decision to adopt a new technology or service (Kim et al., 2007). According to VAM, adoption intention is influenced by the overall value assessment of the technology, which is determined by comparing perceived benefits and sacrifices. Simply put, consumers are more likely to adopt a new technology when its perceived advantages (e.g., usefulness, enjoyment, and convenience) outweigh its disadvantages (e.g., cost, complexity, and risk). This mechanism is consistent with Nguyen et al. (2020), who found that perceived value played a critical mediating role in the adoption of smart services within digital channels.

Traditional models such as the technology acceptance model (TAM) focus primarily on perceived usefulness and ease of use, whereas VAM explicitly incorporates the formula “value = benefits – sacrifices,” thereby offering a more comprehensive explanation of consumer decision-making within digitally mediated distribution channels. VAM suggests that airlines introducing NFT-based services should focus on maximizing consumers' net value. Even if the process involves complexities, such as installing a blockchain wallet or completing NFT issuance procedures, consumers may still adopt the service if the perceived rewards (e.g., priority access to discounted fares and bonus NFTs convertible to mileage points) are sufficiently compelling. However, as Lyu, Huang, and Chen (2025) suggest, perceived risk and innovation resistance can act as crucial barriers to adoption in digital distribution contexts, highlighting the need for careful service design. In this way, NFTs function not only as promotional tools but also as new digital service distribution vehicles that deliver personalized and value-added benefits to consumers.

Recent studies have empirically validated the value–adoption link in the NFT domain using the VAM framework. For example, in the case of professional baseball NFTs, consumers were more likely to adopt them when the satisfaction and economic benefits derived from fan engagement outweigh the sacrifices involved, such as learning costs or monetary investments (Vega & Camarero, 2024). Another study on NFT consumers also found that the balance between perceived benefits and sacrifices had a significant effect on purchase intention (Fortagne & Lis, 2024). Therefore, services designed to maximize benefits and minimize sacrifices are relevant in the context of consumer value creation across digital distribution chains in the service industry. From the VAM perspective, the success of NFT-driven innovation in airline services ultimately hinges on how effectively these services deliver value through strategically managed digital distribution.

3. Research Model and Hypotheses

This study focused on the four key attributes of airline-issued NFT art considered most relevant in the context of perceived value formation in digital service distribution environments: scarcity, reliability, aesthetic quality, and experiential value. These attributes comprehensively represent both functional/economic and emotional/experiential value, aligning logically with how airline service consumers form value judgments and engage in nontraditional distribution mechanisms, such as blockchain-based platforms. **Figure 1** illustrates the conceptual research model, in which the four NFT art characteristics are posited to enhance perceived value, which in turn drives purchase intention. Additionally, the NFT purchase purpose (investment vs. non-investment) was proposed to moderate the effects of NFT art characteristics on perceived value.

3.1. Scarcity and Perceived Value

In the context of NFT art, scarcity refers to how limited or exclusive a digital item is. According to marketing and consumer behavior research, consumers tend to assign higher value to products or services perceived as scarce. This is supported by commodity theory, which suggests that a decrease in availability increases the subjective value of a good (Brock, 1968; Lynn, 1991).

For example, the classic study by Worchel et al. (1975) found that people rated cookies more favorably when fewer were placed in a jar, demonstrating the scarcity effect. Follow-up studies have consistently shown that a limited supply or exclusive editions enhance perceived quality, preference, and willingness to pay (Balachander & Stock, 2009; Lynn, 1992; Parker & Lehmann, 2011; Verhallen, 1982). Both demand-based scarcity cues (e.g., “almost sold out”) and supply-based cues (e.g., “limited edition”) have been found to enhance consumers’ perceptions of product popularity and quality, thereby increasing perceived value (Aggarwal et al., 2011; Gierl & Huettl, 2010).

In the NFT context, scarcity is a defining feature—engineered and authenticated via blockchain. Thus, artificial scarcity of digital assets is a unique value proposition of NFTs (Mardon & Belk, 2018). Research indicates that the scarcity of digital goods, much like physical products, enhances consumer appeal and positively impacts value perception (Chae et al., 2020; Kumar et al., 2025). Although some studies suggest that scarcity may be less effective for intangible goods, early research on NFT consumers shows that limited-edition NFTs generate higher perceived value than non-limited ones (Chang et al., 2024). Therefore, the scarcer an airline’s NFT art, the more likely consumers are

to perceive its uniqueness and evaluate its overall value more positively.

H1: The scarcity of airline NFT art will have a positive effect on consumers’ perceived value.

3.2. Reliability and Perceived Value

The reliability of NFT art encompasses trust in the artwork itself, the issuing platform or airline, and the NFT technology. Given the intangible nature of digital assets, perceived risk tends to be high, making trust a critical factor in consumer value evaluations (Ba & Pavlou, 2002). NFTs offered by a reputable airline brand can significantly enhance trust as consumers may associate the brand’s credibility with authenticity and quality assurance. Studies on NFT valuations highlight the importance of trust in blockchain technology and the authenticity of digital assets in shaping perceived value. Jang and Kang (2025) argue that NFTs help resolve trust issues in digital art by verifying ownership and authenticity, ultimately enhancing both collectible and investment value. Furthermore, reliability reduces perceived transaction risk, increases the perceived benefit-to-cost ratio, and thus raises the overall perceived value (Yilmaz et al., 2023). Therefore, when consumers perceive airline-issued NFT art as trustworthy, owing to features such as tamper-proof authenticity, secure transactions, and brand accountability, they are more likely to perceive higher value from the offering.

H2: The reliability of airline NFT art will have a positive effect on consumers’ perceived value.

3.3. Aesthetic Quality and Perceived Value

Aesthetic quality refers to the artistic beauty, visual appeal, and design sophistication of NFT artwork. Extensive literature on product design and aesthetic consumption has shown that when consumers derive aesthetic pleasure from a product, their valuation of it increases (Bloch et al., 2003; Holbrook & Hirschman, 1982). For instance, according to the Art Infusion Effect demonstrated by Hagtvedt and Patrick (2008), incorporating artistic imagery into consumer goods makes them appear more luxurious and valuable. This indicates that aesthetics provides emotional satisfaction and amplify symbolic value. Chitturi et al. (2008) showed that the hedonic benefits of product design evoke delight, which can increase satisfaction and perceived value beyond functional benefits. Veryzer and Hutchinson (1998) also found that aesthetic coherence and prototypicality enhance aesthetic responses and perceived value in new product designs.

As NFT art is inherently artistic, its visual appeal and expressiveness play central roles in its perceived value. High aesthetic quality provides aesthetic pleasure and emotional arousal, making consumers feel not only joy in ownership but also pride in the collection (Holbrook, 1999). In digital art, attractive and original designs enhance collectability and perceived value (Mardon & Belk, 2018). Moreover, consumers tend to infer higher quality and craftsmanship from aesthetically superior designs, leading to increased perceived value (Creusen & Schoormans, 2005). Thus, the more visually sophisticated and artistically appealing airline NFT art, the more likely consumers are to perceive high emotional and aesthetic value, leading to an increase in overall perceived value.

H3: The aesthetic quality of airline NFT art will have a positive effect on consumers' perceived value.

3.4. Experiential Value and Perceived Value

In the context of NFT art, experiential value refers to the experiential benefits that consumers gain through the ownership or use of artwork. These may include the enjoyment of viewing art, engagement in exclusive community experiences enabled by NFT ownership, participation in events, and the benefits associated with the artwork. According to experiential marketing theory, the richer the sensory, emotional, and cognitive experiences derived from a product or service, the greater its perceived value (Schmitt, 1999). Mathwick et al. (2001) found that providing interactive and entertaining experiences in online shopping environments enhanced consumers' experiential value, which, in turn, positively affected satisfaction and usage intention. Similarly, Mathwick et al. (2001) demonstrated that a holistic experience associated with a brand significantly affected brand loyalty.

In the case of airline NFT art, experiential value can be generated in several ways. First, exclusive experiences provided to NFT holders, such as access to airline lounges or invitations to special promotions, can enhance the perceived added value of the NFT. These tangible benefits allow consumers to experience utility directly, thereby increasing perceived value (Chen & Chen, 2010). Second, the digital interactivity of NFT art, such as augmented reality (AR) displays or collection features shareable on social media, can create hedonic value by providing enjoyment and engagement (Pine & Gilmore, 2011). Chen and Chen (2010) found that multisensory experiential marketing in theme park environments enhanced both emotional and functional value, leading to higher satisfaction. Similarly, when consumers directly interact with and experience digital art, their perceived value increases. Finally, the community experience among NFT

holders is also important. Participation in an NFT community can foster a sense of belonging and exclusivity, thus enhancing social value of the NFT (Sweeney & Soutar, 2001). Accordingly, the richer the experiential components offered by airline NFT art, such as the joy of appreciation, interactive fun, and social interaction with other owners, the greater the total perceived value it will generate.

H4: The experiential value of airline NFT art will have a positive effect on consumers' perceived value.

3.5. Perceived Value and Purchase Intention

Perceived value is defined as a consumer's overall evaluation of the benefits expected from a product or service relative to the costs incurred to obtain it (Zeithaml, 1988). Numerous studies have consistently reported that perceived value is a key antecedent to purchase intention. A high perceived value implies that the consumer considers the product "worth it," thereby increasing the likelihood of purchase (Chang & Wildt, 1994). Dodds et al. (1991) empirically demonstrated that price, brand, and store information affected perceived value, which subsequently enhanced purchase intention. Similarly, Cronin et al. (2000) found that perceived value in the service industry positively influenced behavioral intentions, such as repurchases and recommendations. In the emerging NFT domain, perceived value serves as a critical predictor of adoption and purchase intentions. Chang et al. (2024) reported that factors such as scarcity and innovativeness indirectly influence purchase intention through perceived value (e.g., enjoyment or investment potential). This suggests that even for digital assets such as NFTs, the traditional value-intention relationship holds true. Therefore, the higher the perceived value derived from airline NFT art, such as aesthetic enjoyment or investment returns, the stronger the consumer's purchase intentions.

H5: The higher the consumer's perceived value, the greater their purchase intention for airline NFT art.

3.6. Moderating Effect of Purchase Purpose (Investment vs. Non-Investment)

Prior research suggests that NFT purchasers vary in their motivations, including investment and hedonic/consumption motives. Fortagne and Lis (2024) note that some consumers purchase NFTs as investment tools, while others do so to enjoy art appreciation. These differing motives may lead to distinct value-formation mechanisms depending on NFT attributes. This study examined whether the effects of scarcity, reliability, aesthetic quality, and

experiential value on perceived value were moderated by consumers' NFT purchase purpose.

Scarcity, a hallmark of NFTs, enhances their value by signaling limited availability. Blockchain technology allows NFTs to maintain engineered scarcity, which is a prerequisite for value creation (Fortagne & Lis, 2023). Schaar and Kampakis (2022) showed that scarcity positively influenced prices in the CryptoPunks NFT collection. Hence, scarcity signals future financial potential, particularly for investment-motivated consumers. In contrast, consumers with hedonic values may place less emphasis on scarcity, valuing personal enjoyment and collection experience more. Reliability increases perceived value by assuring buyers of asset authenticity and security. Kim et al. (2024) showed that the visualization of NFTs improved consumer trust and willingness to pay for associated luxury products. Fortagne and Lis (2024) also emphasize the role of authenticity in value formation. For investment buyers, trust in the security and authenticity of an asset is critical, whereas non-investment buyers may prioritize aesthetic or experiential satisfaction, diminishing the impact of reliability. Aesthetic quality is a major factor affecting hedonic value. Fortagne and Lis (2024) identified aesthetic elements as central to shaping NFT consumers' hedonic attitudes. Non-investment (art-focused) buyers are more likely to consider aesthetic enjoyment crucial, whereas investors may be more concerned with future resale value. Similarly, experiential value might be appreciated more by non-investment consumers who seek entertainment and community than by outcome-focused investors.

Based on these considerations, the following hypotheses were proposed regarding the moderating effects of purchase purpose:

H6-1: Purchase purpose (investment vs. non-investment) moderates the relationship between scarcity and perceived value, such that the positive effect of scarcity is stronger among investment-oriented consumers than among non-investment-oriented consumers.

H6-2: Purchase purpose moderates the relationship between reliability and perceived value, such that the positive effect of reliability is stronger among investment-oriented consumers than among non-investment-oriented consumers.

H6-3: Purchase purpose moderates the relationship between aesthetic quality and perceived value such that the positive effect of aesthetic quality is stronger among non-investment-oriented consumers than among investment-oriented consumers.

H6-4: Purchase purpose moderates the relationship between experiential value and perceived value, such that the positive

effect of experiential value is stronger among non-investment-oriented consumers than among investment-oriented consumers.

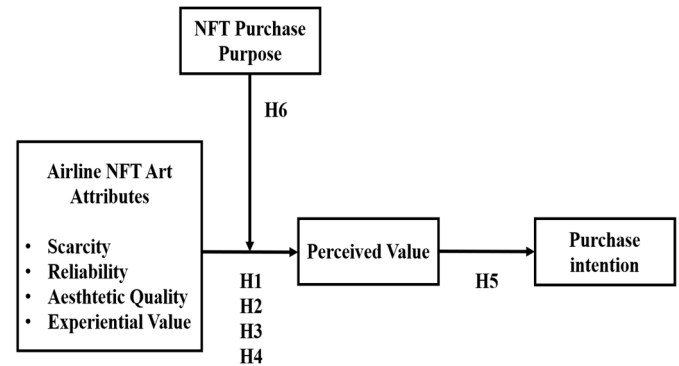


Figure 1: Conceptual Framework

4. Research Design

4.1. Survey Design and Sample

To empirically test the proposed research model, this study employed a survey method. In 2023, convenience sampling targeted consumers who had either purchased NFTs or were familiar with them. A structured questionnaire, focusing on experiences and perceptions of airline NFT art, was distributed via an online survey platform. A total of 247 valid responses were collected from both domestic and international consumers with diverse demographic profiles.

To maintain blind review standards, all identifying researcher information was removed from the questionnaire and data collection process. Respondents were informed of the study's purpose in general terms (i.e., as research on digital assets in the airline context) to avoid response bias. Ethical research standards were observed, and participants were assured of anonymity and confidentiality.

4.2. Variable Definitions and Measurement Tools

The questionnaire included multiple items measuring the study's key constructs. Whenever possible, measurement items were adapted, refined, and supplemented from prior validated scales. Each construct was assessed using approximately five items on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Scarcity of airline NFT art was defined as the perceived limitation of use and trading opportunities due to restricted supply or high demand. Sample items included: "This NFT art will have a limited sales volume" and "Only a small number of consumers will be able to own it" (Bai et al., 2025; Fortagne & Lis, 2024).

Reliability referred to the degree to which airline NFT art was perceived as trustworthy, securely managed, and free from arbitrary modification, deletion, or error. Example items included: “*The data management of the NFT will be secure*” and “*It will be processed transparently*” (Kim et al., 2024; Saberi et al., 2019).

Aesthetic quality was defined as the extent to which the NFT conveyed visual appeal, artistic value, emotional resonance, and design sensibility. Example items included: “*The design of the NFT art is attractive*” and “*It provides an emotional experience*” (Kim et al., 2022; Lu et al., 2022; Shin et al., 2024).

Experiential value captured the extent to which NFT art satisfied various experiential elements and offered direct digital engagement. Example items included: “*It provides a unique purchase experience*” and “*The purchasing process will be enjoyable*” (Kim et al., 2022; Lu et al., 2022; Shin et al., 2024).

Perceived value was defined as the customer’s overall evaluation of utility and benefits obtained during NFT transactions. It was measured with items such as: “*It gives me a satisfactory feeling*”, “*It is reasonable compared to the cost*”, and “*It will be economically helpful*” (Kim, 2023; Joo & Koo, 2014; Sweeney & Soutar, 2001).

Purchase intention was defined as the willingness to engage in airline NFT transactions (e.g., purchase, creation, or resale) and the degree of intention to expand such activities. It was measured with items such as: “*I intend to purchase it*” and “*I would recommend it to acquaintances*” (Hsu & Lin, 2015; Kim, 2023; Lou & Yuan, 2019).

Purchase purpose was measured with a binary item asking whether respondents expected investment returns. Based on their responses, participants were categorized into “investment purpose” and “non-investment purpose.” This variable was later used for multi-group analysis.

5. Empirical Analysis

5.1. Analysis Method

The collected data were analyzed using the statistical software packages SPSS 25.0 and AMOS 25.0. First, descriptive statistics and frequency analyses were conducted to identify the respondents’ general characteristics. SPSS 25.0 and AMOS 25.0 were used throughout the analysis process. Frequency analysis was conducted to examine the general characteristics of the survey participants. Reliability and confirmatory factor analyses were performed to verify the reliability and validity of the measurement items. Structural equation modeling (SEM) was conducted to test

the hypotheses. Multi-group analysis was performed to examine the moderating effects based on the NFT purchase purpose.

According to the analysis, nationality was distributed as follows: 176 Korean respondents (71.3%) and 71 non-Korean respondents (28.7%). The gender distribution was as follows: men, 128 respondents (51.8%) and women, 119 respondents (48.2%). Regarding the NFT purchase purposes, 130 respondents (52.6%) reported investment-related purposes, while 117 (47.4%) reported non-investment purposes.

5.2. Validity and Reliability Verification

The validity and reliability of the measurement tools are listed in Table 1. Exploratory factor analysis revealed that all factor loadings for the factors extracted in this study were greater than 0.60, indicating construct validity. The reliability coefficients were all above 0.70, demonstrating acceptable internal consistency (Nunnally & Bernstein, 1994).

In addition, the confirmatory factor analysis (CFA) results for the measurement model were as follows: CMIN = 633.915 (df = 338, $p < .001$), CMIN/df = 1.875, RMR = 0.064, CFI = 0.950, NFI = 0.900, IFI = 0.951, TLI = 0.940, and RMSEA = 0.060, indicating that the measurement model showed a good fit.

The standardized factor loadings for each item ranged from 0.584 to 0.930. The composite construct reliability (CCR) values ranged from 0.869 to 0.962, all exceeding the recommended threshold of 0.70. The average variance extracted (AVE) values ranged from 0.577 to 0.836, all above the acceptable cutoff of 0.50, confirming the convergent validity of the measurement items (Fornell & Larcker, 1981).

5.3. Correlation and Discriminant Validity Verification

To verify the correlation and discriminant validity, the correlation coefficients among the six latent variables and the square roots of the average variance extracted (AVE) values were assessed (Table 2). Discriminant validity is established when the square root of the AVE for each construct is greater than the correlation between that one and any other construct. In this study, the highest squared correlation value was between Perceived Value and Purchase Intention, at 0.430, whereas the lowest AVE value was 0.577 for Scarcity, which was higher than the highest squared correlation. This indicates that discriminant validity was adequately established among the constructs.

Table 1: Exploratory Factor Analysis and Reliability Verification

Factor	Measurement Item	Factor Loading	Reliability	CCR	AVE
Scarcity	Airline NFT art will be sold in limited quantities.	.865	.854	.869	.577
	Only a few consumers will be able to purchase airline NFT art.	.855			
	The production of airline NFT art will be limited.	.793			
	Not many people will own airline NFT art.	.679			
	Airline NFT art will be sold out in a short period of time.	.640			
Reliability	The management of airline NFT art's unique data will be stable.	.861	.928	.938	.751
	The unique data of airline NFT art will be handled transparently.	.842			
	The unique data of airline NFT art will not be arbitrarily modified.	.832			
	The unique data of airline NFT art will be securely stored.	.810			
	The unique data of airline NFT art is trustworthy.	.805			
Aesthetic Quality	Airline NFT art seems to reproduce the atmosphere of an actual gallery or exhibition space well.	.861	.938	.937	.787
	The overall atmosphere of airline NFT art was attractive.	.857			
	The content design of airline NFT art seemed carefully crafted.	.857			
	Airline NFT art will provide an emotional experience.	.791			
Experiential Value	Airline NFT art will offer me a unique purchase experience.	.889	.957	.962	.836
	Purchasing airline NFT art will be an enjoyable experience.	.860			
	Purchasing airline NFT art will help improve my mood.	.856			
	Buying airline NFT art will be interesting.	.849			
	I will lose track of time while purchasing airline NFT art.	.819			
Perceived Value	Airline NFT art gives me a satisfying feeling.	.826	.833	.912	.676
	Purchasing airline NFT art will be reasonable in terms of cost.	.788			
	Purchasing airline NFT art will be economically beneficial.	.782			
	Airline NFT art is beneficial to me.	.743			
	I will gain more value than the cost I pay through purchasing airline NFT art.	.743			
Purchase Intention	I am willing to purchase airline NFT art.	.892	.912	.912	.676
	I will speak positively about purchasing airline NFT art to others.	.887			
	There is a high possibility that I will repurchase airline NFT art.	.881			
	I am willing to purchase airline NFT art even if the price is somewhat high.	.840			
	I will recommend purchasing airline NFT art to others.	.814			

Table 2: Correlation Matrix and Discriminant Validity Verification

Category	M±SD	1	2	3	4	5	6
1. Scarcity	3.18±.762	<u>.577</u>					
2. Reliability	3.53±.840	.413*	<u>.751</u>				
3. Aesthetic Quality	3.65±.899	.191*	.412*	<u>.787</u>			
4. Experiential Value	3.54±.880	.289*	.465*	.613*	<u>.836</u>		
5. Perceived Value	3.51±.528	.446*	.525*	.369*	.504*	<u>.676</u>	
6. Purchase Intention	3.32±.882	.424*	.522*	.485*	.537*	.656*	<u>.676</u>

* $p < .001$

5.4. Structural Model and Hypothesis Testing

Table 3 presents the results of the structural model fit and hypothesis testing.

The structural model showed a good fit with the following indices: CMIN = 627.813 (df = 340, $p < .001$), CMIN/df = 1.847, RMR = 0.064, CFI = 0.952, NFI = 0.901, IFI = 0.952, TLI = 0.942, and RMSEA = 0.059. Because the model fit was deemed acceptable, we examined the path coefficients for the hypotheses.

All four NFT art attributes had significant positive effects on perceived value. Specifically, the path coefficient for scarcity was 0.208 (C.R. = 3.312, $p < .001$), for reliability was 0.376 (C.R. = 5.204, $p < .001$), for aesthetic quality was 0.145 (C.R. = 2.086, $p < .05$), and for experiential value was 0.301 (C.R. = 3.961, $p < .001$), all indicating significant positive effects on perceived value. Therefore, Hypotheses 1, 2, 3, and 4 were supported.

The path coefficient for perceived value → purchase intention was 0.837 (C.R. = 9.477, $p < .001$), showing a significant positive effect on purchase intention. Thus,

Hypothesis 5 was supported. This result reinforces the classic finding that greater perceived value leads to higher purchase propensity, consistent with Zeithaml's (1988)

concept of value-driving purchase decisions and with prior studies in distribution contexts (e.g., Cronin et al., 2000; Dodds et al., 1991).

Table 3: Structural Model and Hypothesis Testing

Hypothesis	Path	Unstandardized Coefficient	Standardized Coefficient	Standard Error	C.R.	Result
H1	Scarcity → Perceived Value	.124	.208	.038	3.312*	Supported
H2	Reliability → Perceived Value	.195	.376	.037	5.204*	Supported
H3	Aesthetic Quality → Perceived Value	.075	.145	.036	2.086*	Supported
H4	Experiential Value → Perceived Value	.150	.301	.038	3.961*	Supported
H5	Perceived Value → Purchase Intention	1.799	.837	.190	9.477*	Supported

Model Fit Indices : CMIN=627.813(df=340, $p < .001$), CMIN/df=1.847, RMR=.064, CFI=.952, NFI=.901, IFI=.952, TLI=.942, RMSEA=.059

5.5. Moderating Effect Analysis by NFT Purchase Purpose

Multigroup analysis was conducted to test Hypothesis 6 (with sub-hypotheses 6-1, 6-2, 6-3, and 6-4), which examined the moderating effects of NFT purchase purpose on the relationship between airline NFT art attributes and perceived value. To analyze the moderating effect based on NFT purchase purpose, a baseline model and an alternative model were established. The difference in χ^2 values between the two models—considering their degrees of freedom—was used to determine the significance of moderation. Table 5 presents the results of the analysis.

For the multi-group analysis, the sample was divided into two groups based on self-reported purchase motives: investment purpose (n = 130) and non-investment purpose (n = 117). We first estimated an unconstrained model allowing all path coefficients to differ between the two groups and then a constrained model in which the structural paths from the four NFT characteristics to perceived value were set equal across groups. The constrained model yielded $\chi^2(684) = 1242.264$, while the unconstrained model yielded $\chi^2(680) = 1226.127$. Comparing these, the χ^2 value of the unconstrained model was lower by $\Delta\chi^2 = 16.137$ with $\Delta df = 4$, which is significant ($p = .003$). Allowing the path coefficients to differ by purchase purpose led to a significantly better model fit, indicating that the moderating effect of purchase purpose was statistically significant.

To identify the specific paths that showed significant differences between the groups, each hypothesized path was individually constrained, and a follow-up multigroup

analysis was conducted. As shown in Table 5, a significant difference was found in the effect of scarcity on perceived value depending on NFT purchase purpose ($\Delta\chi^2(1) = 12.208$, $p < .01$).

Table 4: Chi-Square Difference Test Results by NFT Purchase Purpose

Model	χ^2	df	$\Delta\chi^2$	Δdf	p
Unconstrained Model	1226.127	680	16.137	4	.003
Constrained Model	1242.264	684			

For participants with investment purpose, scarcity had a strong positive effect on perceived value ($\beta = 0.520$, $p < .001$), whereas for those with non-investment purpose, scarcity's effect was not significant ($\beta = -0.184$, $p > .05$). This indicates a clear difference between the two groups, in line with H6-1: The impact of scarcity is only salient for the investor group. In contrast, the effects of reliability ($\Delta\chi^2(1) = 2.663$, $p > .05$), aesthetic quality ($\Delta\chi^2(1) = 0.202$, $p > .05$), and experiential value ($\Delta\chi^2(1) = 3.379$, $p > .05$) did not show statistically significant differences between groups. These results indicate that only Hypothesis 6-1 was supported, whereas Hypotheses 6-2, 6-3, and 6-4 were not supported by significant moderating effects.

In summary, consumer purchase motivation moderated the influence of scarcity on perceived value: scarcity strongly boosted perceived value for investors but had little to no effect on non-investors. On the other hand, reliability, aesthetic quality, and experiential value appeared to uniformly enhance perceived value across both groups.

Accordingly, only Hypothesis 6-1 was supported.

Table 5: Multi-Group Analysis by NFT Purchase Purpose

Hypothesis	Path	Investment Purpose(n=130)		Non-Investment Purpose(n=117)		$\Delta\chi^2$ (df=1)	Result
		Standardized Coefficient	C.R.	Standardized Coefficient	C.R.		
H6-1	Scarcity → Perceived Value	.520	4.569*	-.184	-1.824	12.028	Supported
H6-2	Reliability → Perceived Value	.248	2.406*	.342	3.579*	2.663	Not Supported
H6-3	Aesthetic Quality → Perceived Value	.215	2.099*	.163	1.644	.202	Not Supported
H6-4	Experiential Value → Perceived Value	.251	2.556*	.490	4.109*	3.379	Not Supported

* $p < .05$, $p < .01$, ** $p < .001$

6. Conclusion

6.1. Summary and Interpretation of Findings

The purpose of this study was to investigate how the characteristics of airline-issued NFT art influenced consumers' perceived value and purchase intention. Additionally, it examined the moderating effect of the NFT purchase purpose (investment vs. non-investment) on the relationship between NFT attributes and perceived value. In summary, all four NFT art attributes – scarcity, reliability, aesthetics, and experientiality – were found to positively influence perceived value. This implies that the more consumers perceived these attributes as strong, the more valuable they regarded the NFT. Among the four, reliability and experientiality had relatively stronger effects, suggesting that establishing trust (e.g., security and authenticity) and offering engaging experiences (e.g., entertainment and community participation) played key roles in consumers' evaluations of NFT value.

Hypothesis 5 was also strongly supported: perceived value significantly increased consumers' purchase intention. This finding aligns with Zeithaml's (1988) conceptualization that the trade-off between perceived benefits and costs drives purchase decisions, and echoes the value-intention link emphasized in classic consumer behavior research (e.g., Cronin et al., 2000; Dodds et al., 1991). It also supports the value-based adoption model (e.g., Kim et al., 2007) in the context of airline NFTs, highlighting that unfamiliar products such as NFTs must provide substantial value to drive consumer acceptance and purchase. Consistent with previous studies in other contexts, perceived value emerged as a critical predictor of behavioral intention in the digital service distribution setting.

The results partially supported Hypothesis 6, which examined the moderating effects of purchase purpose. A significant difference emerged in the path from scarcity to perceived value: for investment-oriented consumers, scarcity strongly influenced perceived value ($\beta = .520, p < .001$), whereas for non-investment consumers, it did not ($\beta = -.184, p > .05$). No significant group differences were found for the effects of reliability, aesthetics, or experientiality on perceived value. These results imply both commonalities and distinctions in how different consumer segments evaluate NFT value. Attributes such as reliability, aesthetics, and experientiality appear to universally enhance perceived value, regardless of the purchase motive.

Reliability, a fundamental requirement in digital asset transactions, was significant across groups. Similarly, aesthetics and experientiality provided direct utility and satisfaction, contributing meaningfully to value assessment. Investors may value the artistic quality and ownership experience of NFTs because these elements can affect

market popularity and scarcity perceptions (Lee et al., 2018). In contrast, only scarcity showed a differential effect based on purchase motivation. This empirically demonstrates that, even with the same product, consumers' psychological evaluations and behaviors vary depending on their usage intent. These findings suggest the need for consumer segmentation in both academic analysis and practical NFT marketing. Notably, this moderating pattern (scarcity mattering only to investors) has not been highlighted in prior NFT studies. For example, Kim and Kim (2023) examined generational differences and found that perceived value influenced NFT purchase intention across generations, without isolating a specific attribute difference. Our results extend this research by showing that the investment motive is a significant differentiator of the impact of scarcity on perceived value, whereas other attributes yield similar value boosts regardless of motive.

Overall, our findings are consistent with those of previous research on NFT consumer behavior and value. For instance, Kumar et al. (2025) also reported that NFT art characteristics positively affected consumers' perceived value, and a recent study in the sports NFT context (Lee et al., 2023) found that NFT product attributes enhanced perceived value and satisfaction, consistent with our results for the airline context. The strong influence of perceived value on purchase intention in our model corroborates the established relationships observed in traditional service settings (e.g., Cronin et al., 2000; Dodds et al., 1991), reinforcing the notion that providing clear consumer value is pivotal for driving purchase behavior, even for novel digital products. However, our moderation analysis adds a new nuance by revealing that the impact of scarcity is much more pronounced for investors, an aspect not explicitly demonstrated in earlier studies. This underscores the importance of considering consumer motivations when evaluating the effectiveness of NFT attributes.

6.2. Theoretical Implications

This study advances the academic literature in several important ways.

First, by applying perceived value theory and the value-based adoption model (VAM) to the novel context of airline NFTs, we empirically confirmed that perceived value mediates the effect of product attributes on purchase intention. While prior research has shown that novelty and functionality influence NFT purchase intentions in general contexts, our findings demonstrate that scarcity and experientiality in airline NFTs similarly enhance value evaluations, thereby supporting Kim et al.'s (2007) VAM. The particularly strong effect of perceived value ($\beta \approx .84$ in our model) underscores that unfamiliar products must deliver clear and tangible value to motivate consumer action.

This highlights the importance of value-centric approaches in digital asset adoption research and extends the applicability of VAM beyond traditional technology products.

Second, this study identified and validated four specific attributes of airline NFT art—scarcity, reliability, aesthetics, and experientiality—as key antecedents of perceived value. Whereas prior NFT research has often discussed perceived value in abstract terms or emphasized general technology acceptance factors, our study provides a context-specific synthesis of widely cited NFT characteristics such as digital rarity, blockchain transparency, artistic value, and hedonic experience. By empirically testing these factors, we extend theoretical understanding of how each attribute contributes to value formation. In particular, the role of experientiality links NFT adoption to experiential consumption theory, suggesting that frameworks of hedonic value (Holbrook & Hirschman, 1982; Schmitt, 1999) are highly relevant for digital service distribution.

Third, we examined NFT purchase purpose (investment vs. non-investment) as a moderating factor, offering novel insights into group differences. Prior studies have considered generational or psychological ownership differences (e.g., Kim & Kim, 2023) but rarely investigated investment motivation. Our results show that scarcity significantly influences perceived value only among investors, providing empirical evidence that usage intent shapes consumer perceptions. This suggests that theoretical models of NFT adoption should explicitly incorporate consumer goals as moderators, as the impact of certain attributes (e.g., scarcity) depends on purchase motivations.

Fourth, we introduced the concept of NFT adoption into airline management and service distribution research. Traditionally, airline studies have emphasized service marketing, loyalty, and distribution strategies. By integrating NFT technology into this domain, we bridge digital asset literature with service marketing, demonstrating that blockchain-enabled artifacts can function as service delivery mechanisms. This expands the scope of distribution science by positioning NFTs as both technological and experiential tools within service ecosystems.

Finally, our findings that reliability and experiential value exert stronger effects on perceived value than scarcity highlight that consumers view airline NFTs primarily as extensions of service quality and customer experience, rather than as speculative collectibles. This implies that established service quality frameworks—trust, perceived risk, and value co-creation—can be extended to digital-token offerings. Consequently, this study contributes to the theoretical convergence of digital innovation and service marketing, showing how NFTs, as digital artifacts, can be

evaluated through the same value lenses applied to other service innovations.

6.3. Managerial Implications

These findings provide several practical insights for airlines and service firms adopting NFTs. First, value creation must be central when designing airline NFT offerings. Since perceived value drives purchase intention, airlines should clearly communicate tangible benefits. For example, linking NFTs to loyalty bonuses or VIP services can increase perceived utility. Lufthansa's *Uptrip* program exemplifies this by offering rewards such as free Wi-Fi and lounge access, thereby boosting functional value.

Second, marketing strategies should be tailored to NFT attributes. Our results show that scarcity appeals more strongly to investment-oriented consumers. Airlines targeting investor-type customers could issue limited-edition NFTs (e.g., exclusive collectibles or auctions). However, excessive scarcity may deter casual consumers, so offering accessible options (e.g., open editions or affordable fixed-price NFTs) prevents alienation. Reliability—security and authenticity—is equally vital for all segments. Airlines should restrict NFT transactions to official platforms, disclose smart contract details, and implement fraud detection and customer-support systems for lost access. Such measures enhance trust among both investors and non-investors.

Third, consumer support is critical to reduce apprehension about new technologies. User-friendly guides for wallet setup, assurances of asset recovery, and responsive helplines can build trust, especially among non-crypto-savvy users. Trust-building efforts are essential to attract novices who may otherwise hesitate.

Fourth, aesthetic appeal should leverage airline brand assets. Using logos, iconic imagery (e.g., liveries), and collaborations with reputable digital artists or cultural designers can boost desirability and emotional engagement.

Fifth, experiential strategies extend value beyond transactions. Airlines can organize exclusive communities or events for NFT holders—for instance, metaverse gatherings, virtual museum tours, or meet-ups. Gamification (e.g., rewards for completing NFT card sets, as *Uptrip* does) strengthens engagement and loyalty by fostering achievement and community identity.

Finally, differentiated strategies by customer segment are necessary. Investors prioritize exclusivity and ROI, so marketing should highlight “limited edition,” “exclusive drop,” or “investment opportunity,” promoted via crypto forums and financial influencers. Casual consumers, particularly Gen Z, value enjoyment and personal ownership; campaigns should emphasize fun experiences and collectibles, using social media, gaming platforms, or pop

culture collaborations. Demographic tendencies (e.g., investors skewing older, wealthier males; experiential users younger and female) can further guide targeting, visuals, and media placements.

In sum, companies must clarify both the value offered (“what do customers get?”) and the audience (“who is the target segment?”). NFTs should be treated as strategic tools in marketing and distribution, not passing fads. When positioned to deliver genuine functional, monetary, social, or experiential value, NFTs can generate lasting customer engagement in airline services.

6.4. Managerial and Policy Implications for Distribution

From a distribution perspective, airlines should integrate NFT art into existing digital sales and loyalty channels with an emphasis on transparency, authenticity, and security. Practically, this means selling only via official or vetted platforms, disclosing smart-contract details and provenance, and applying robust authentication (e.g., two-factor verification and secure wallets). Prior research shows such assurances significantly boost purchase intent, underscoring the need for channel designs that embed trust.

Theoretically, these results imply that traditional channel-management frameworks must adapt for intangible digital goods. NFT platforms now act as value-creating intermediaries that convey service-quality cues (e.g., reliability, reduced risk). Policy-wise, regulators and industry consortia should establish standards to strengthen trust in NFT distributions. This includes standardized IP-licensing terms, consistent takedown procedures for fraudulent tokens, transparent risk disclosures, and fair refund/escrow mechanisms. Such measures would enhance structural integrity, safeguard end-user interests, and foster long-term adoption.

6.5. Limitations and Future Research Directions

Despite its contributions, this study has limitations that suggest avenues for further research. First, reliance on convenience sampling may limit generalizability. Future studies should use random sampling and larger datasets to better represent airline customers and NFT users.

Second, respondents were not segmented by NFT experience level or blockchain attitudes. More experienced users or those with favorable views of blockchain may respond differently. Future research should incorporate variables such as prior NFT ownership and crypto literacy to provide sharper insights.

Third, the model excluded other relevant constructs, such as brand attachment, detailed perceived risk, or psychological ownership. These could meaningfully shape

NFT valuation. For example, exploring whether owning an airline NFT fosters psychological ownership of the airline brand would be a valuable extension.

Fourth, the study used a cross-sectional self-report design, which restricts causal inference. Although SEM supports the hypothesized relationships, longitudinal or experimental studies, as well as behavioral transaction data, would provide stronger validation. For instance, manipulating NFT scarcity levels could reveal differences in perceived value and purchase intention between investors and non-investors.

Fifth, the focus was limited to purchase intention rather than actual post-purchase behavior. Future studies should examine repeat purchases, advocacy behaviors, or secondary-market trading of airline NFTs to assess long-term value realization and customer lifetime value implications.

Finally, this study did not address the sustainability or strategic longevity of NFTs. Open questions remain about whether current adoption is a short-term trend or a durable distribution innovation. Future research should examine regulatory, environmental, and technological developments (e.g., energy-efficient blockchains) that may affect NFTs’ viability in aviation and travel.

By recognizing these limitations, this study encourages further academic dialogue at the intersection of digital asset innovation, consumer value, and distribution science. As industries navigate the balance between technological novelty and enduring customer value, NFTs present fertile ground for advancing both theory and practice.

References

- Aggarwal, P., Jun, S. Y., & Huh, J. H. (2011). Scarcity messages. *Journal of Advertising*, 40(3), 19-30.
- Artusi, F., Magistretti, S., Bellini, E., & Dell’Era, C. (2025). Technology-Aided Customer Experience Innovation: Implementation Modes in Retail. *Creativity and Innovation Management*, 34(2), 414-426. <https://doi.org/10.1111/caim.12646>
- Ba, S., & Pavlou, P. A. (2002). Evidence of the effect of trust building technology in electronic markets: Price premiums and buyer behavior. *MIS quarterly*, 243-268.
- Bai, Z. H., Xu, C., & Cho, S. E. (2025). Content Characteristics and Customer Purchase Behaviors in Nonfungible Token Digital Artwork Trading. *Journal of Theoretical and Applied Electronic Commerce Research*, 20(2), 65. <https://doi.org/10.3390/jtaer20020065>
- Babin, B. J., Darden, W. R., & Griffin, M. (1994). Work and/or fun: measuring hedonic and utilitarian shopping value. *Journal of consumer research*, 20(4), 644-656. <https://doi.org/10.1086/209376>
- Balachander, S., & Stock, A. (2009). Limited edition products: When and when not to offer them. *Marketing Science*, 28(2),

- 336-355. <https://doi.org/10.1287/mksc.1080.0401>
- Bellagarda, J., & Abu-Mahfouz, A. M. (2022). Connect2NFT: A web-based, blockchain enabled NFT application with the aim of reducing fraud and ensuring authenticated social, non-human verified digital identity. *Mathematics*, 10(21), 3934. <https://doi.org/10.3390/math10213934>
- Blau, P. M. (1964). *Exchange and power in social life*. New York: John Wiley & Sons.
- Bloch, P. H., Brunel, F. F., & Arnold, T. J. (2003). Individual differences in the centrality of visual product aesthetics: Concept and measurement. *Journal of consumer research*, 29(4), 551-565.
- Brock, T. C. (1968). Implications of commodity theory for value change. *Psychological foundations of attitudes*, 243-275.
- Chae, H., Kim, S., Lee, J., & Park, K. (2020). Impact of product characteristics of limited edition shoes on perceived value, brand trust, and purchase intention; focused on the scarcity message frequency. *Journal of Business Research*, 120, 398-406.
- Chang, C. W., Lai, C. J., & Yen, C. C. (2024). Examining drivers of NFT purchase intention: The impact of perceived scarcity and risk. *Acta Psychologica*, 248, 104424. <https://doi.org/10.1016/j.actpsy.2024.104424>
- Chang, T. Z., & Wildt, A. R. (1994). Price, product information, and purchase intention: An empirical study. *Journal of the Academy of Marketing science*, 22, 16-27.
- Chen, C. F., & Chen, F. S. (2010). Experience quality, perceived value, satisfaction and behavioral intentions for heritage tourists. *Tourism management*, 31(1), 29-35.
- Chitturi, R., Raghunathan, R., & Mahajan, V. (2008). Delight by design: The role of hedonic versus utilitarian benefits. *Journal of marketing*, 72(3), 48-63.
- Choi, S. W., Lee, S. M., Koh, J. E., Kim, H. J., & Kim, J. S. (2021). A Study on the elements of business model innovation of non-fungible token blockchain game: based on 'PlayDapp' case, an in-game digital asset distribution platform. *Journal of Korea Game Society*, 21(2), 123-138. <https://doi.org/10.7583/JKGS.2021.21.2.123>
- Creusen, M. E., & Schoormans, J. P. (2005). The different roles of product appearance in consumer choice. *Journal of product innovation management*, 22(1), 63-81.
- Cronin, J. J., Brady, M. K., & Hult, G. T. M. (2000). Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments. *Journal of Retailing*, 76(2), 193-218.
- Cropanzano, R., & Mitchell, M. S. (2005). Social exchange theory: An interdisciplinary review. *Journal of Management*, 31(6), 874-900. <https://doi.org/10.1177/0149206305279602>
- Dodds, W. B., Monroe, K. B., & Grewal, D. (1991). Effects of price, brand, and store information on buyers' product evaluations. *Journal of Marketing Research*, 28(3), 307-319. <https://doi.org/10.1177/002224379102800305>
- Eastman, J. K., Yazdanparast, A., & Ketron, S. (2024). Identifying NFT consumer segments: A consumption value theory and luxury perspective. *Marketing Intelligence & Planning*, 42(8), 1581-1600. <https://doi.org/10.1108/MIP-10-2023-0584>
- Folgieri, R., Gričar, S., & Baldigara, T. (2023). NFTs: What opportunities and challenges in tourism? In *Tourism & Hospitality Industry 2022 – Congress Proceedings* (pp. 83-96). Lima, Peru: University of Applied Sciences.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.
- Fortagne, M. A., & Lis, B. (2024). Determinants of the purchase intention of non-fungible token collectibles. *Journal of Consumer Behaviour*, 23(2), 1032-1049. <https://doi.org/10.1002/cb.2191>
- Gierl, H., & Huettl, V. (2010). Are scarce products always more attractive? The interaction of different types of scarcity signals with products' suitability for conspicuous consumption. *International Journal of Research in Marketing*, 27(3), 225-235.
- Hagtvedt, H., & Patrick, V. M. (2008). Art infusion: The influence of visual art on the perception and evaluation of consumer products. *Journal of marketing research*, 45(3), 379-389.
- Hajli, N. (2015). Social commerce constructs and consumer's intention to buy. *International journal of information management*, 35(2), 183-191. <https://doi.org/10.1016/j.ijinfomgt.2014.12.005>
- Hayward, A. (2023, August 31). Airline giant Lufthansa launches NFT loyalty program on Polygon. *Decrypt*. Retrieved June 25, 2025, from <https://decrypt.co/154390/lufthansa-airline-travel-nft-polygon-uptrip>
- Hirschman, E. C., & Holbrook, M. B. (1982). Hedonic consumption: emerging concepts, methods and propositions. *Journal of marketing*, 46(3), 92-101. <https://doi.org/10.1177/002224298204600314>
- Holbrook, M. B. (1999). Consumer value. *A framework for analysis and research*. 91-97
- Holbrook, M. B., & Hirschman, E. C. (1982). The experiential aspects of consumption: Consumer fantasies, feelings, and fun. *Journal of Consumer Research*, 9(2), 132-140. <https://doi.org/10.1086/208906>
- Homans, G. C. (1958). Social behavior as exchange. *American Journal of Sociology*, 63(6), 597-606. <https://doi.org/10.1086/222355>
- Horky, F., Dubbick, L., Rhein, F., & Fidrnic, J. (2023). Don't miss out on NFTs?! A sentiment-based analysis of the early NFT market. *International Review of Economics & Finance*, 88, 799-814. <https://doi.org/10.1016/j.iref.2023.07.016>
- Hsu, C. L., & Lin, J. C. C. (2015). What drives purchase intention for paid mobile apps? –An expectation confirmation model with perceived value. *Electronic commerce research and applications*, 14(1), 46-57. <https://doi.org/10.1016/j.elerap.2014.11.003>
- Jang, J., & Kang, J. (2025). Blockchain meets luxury: The role of NFT authentication in luxury retail platforms. *Journal of Retailing and Consumer Services*, 84, 104262. <https://doi.org/10.1016/j.jretconser.2025.104262>
- Jeong, Y., Jeong, J., Lee, C., & Park, J. (2024). Investigating the Influence of NFT ART Characteristics on Consumer Perceived Value: Insights from Purchasing Experience. *Journal of Korean Society for Quality Management*, 52(2), 255-274. <https://doi.org/10.7469/JKSQM.2024.52.2.255>
- Kim, H. (2022). Understanding and Applying of Non-Fungible Token (NFT) in the Metaverse. *Journal of Payment and Settlement*, 14(2), 217-238. <https://doi.org/10.22898/kpsakr.2022.14.2.217>

- Kim, H., Chan, H., & Gupta, S. (2007). Value-based adoption of mobile internet: An empirical investigation. *Decision Support Systems*, 43(1), 111-126. <https://doi.org/10.1016/j.dss.2005.05.009>
- Kim, J., Cho, A., Lee, D., Park, J., Kim, A., Jhang, J., & Kim, C. (2024). Consumer preferences for the visual presentation of non-fungible tokens (NFTs) of luxury products: The role of perceived authenticity. *Journal of Retailing and Consumer Services*, 82, 104131.
- Kim, J., & Lee, K. (2021). A study on the effect of customer value on purchase intention in online shopping mall. *Journal of Distribution Science*, 19(5), 47-56.
- Kim, J., Shinaprayoon, T., & Ahn, S. J. (2022). Virtual tours encourage intentions to travel and willingness to pay via spatial presence, enjoyment, and destination image. *Journal of Current Issues & Research in Advertising*, 43(1), 90-105. <https://doi.org/10.1080/10641734.2021.1962441>
- Kim, N., & Kim, W. (2023). The effect of NFT consumption value on purchase intention: Focusing on the moderating effects of perceived risk and generation. *Journal of Consumer Policy and Education*, 19(3), 31-53. <https://doi.org/10.15790/cope.2023.19.3.031>
- Kumar, A., Shankar, A., Behl, A., & Wamba, S. F. (2024). Do you believe in the metaverse NFTs? Understanding the value proposition of NFTs in the metaverse. *Technological Forecasting and Social Change*, 210, 123880. <https://doi.org/10.1016/j.techfore.2024.123880>
- Lee, J. H., Lee, S. W., Lee, J. H., & Kim, H. N. (2023). The effects of product features of Korean professional baseball NFTs on customer perceived value, satisfaction, and purchase intentions. *Korean Journal of Sport Science*, 34(3), 489-500.
- Lee, W., Hong, S., & Min, T. (2018). Bitcoin distribution in the age of digital transformation: Dual-path approach. *Journal of Distribution Science*, 16(12), 47-56. <https://doi.org/10.15722/jds.16.12.201812.47>
- Lou, C., & Yuan, S. (2019). Influencer marketing: How message value and credibility affect consumer trust of branded content on social media. *Journal of interactive advertising*, 19(1), 58-73. <https://doi.org/10.1080/15252019.2018.1533501>
- Lu, B., Fan, W., & Zhou, M. (2016). Social presence, trust, and social commerce purchase intention: An empirical research. *Computers in human behavior*, 56, 225-237. <https://doi.org/10.1016/j.chb.2015.11.057>
- Lu, W., Su, Y., Su, S., Zhao, J., & Zhang, L. (2022). Perceived authenticity and experience quality in intangible cultural heritage tourism: The case of Kunqu Opera in China. *Sustainability*, 14(5), 2940. <https://doi.org/10.3390/su14052940>
- Lynn, M. (1991). Scarcity effects on value: A quantitative review of the commodity theory literature. *Psychology & Marketing*, 8(1), 43-57.
- Lynn, M. (1992). Scarcity's enhancement of desirability: The role of naive economic theories. *Basic and applied social psychology*, 13(1), 67-78.
- Lyu, T., Huang, K., & Chen, H. (2025). Exploring the impact of technology readiness and innovation resistance on user adoption of autonomous delivery vehicles. *International Journal of Human-Computer Interaction*, 41(12), 7663-7683. <https://doi.org/10.1080/10447318.2024.2400387>
- Mardon, R., & Belk, R. (2018). Materializing digital collecting: An extended view of digital materiality. *Marketing Theory*, 18(4), 543-570.
- Mathwick, C., Malhotra, N., & Rigdon, E. (2001). Experiential value: conceptualization, measurement and application in the catalog and Internet shopping environment. *Journal of retailing*, 77(1), 39-56. [https://doi.org/10.1016/S0022-4359\(00\)00045-2](https://doi.org/10.1016/S0022-4359(00)00045-2)
- Ng, M., Law, M., Wong, C. B., & Liang, M. (2025). Drivers of non-fungible token (NFT) investment intention: the roles of innovativeness, knowledge, subjective norms and perceived value. *Journal of Electronic Business & Digital Economics*. 4(1), 112-131. <https://doi.org/10.1108/JEBDE-11-2024-0043>
- Nguyen, D. N., Nguyen, D. D., & Nguyen, D. V. (2020). Distribution information safety and factors affecting the intention to use digital banking in Vietnam. *Journal of Distribution Science*, 18(6), 83-91. <https://doi.org/10.15722/jds.18.6.202006.83>
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory (3rd ed.)*. McGraw-Hill.
- Parker, J. R., & Lehmann, D. R. (2011). When shelf-based scarcity impacts consumer preferences. *Journal of retailing*, 87(2), 142-155.
- Pine, B. J., & Gilmore, J. H. (2011). *The experience economy*. Harvard Business Press.
- Saberi, S., Kouhizadeh, M., Sarkis, J., & Shen, L. (2019). Blockchain technology and its relationships to sustainable supply chain management. *International Journal of Production Research*, 57(7), 2117-2135.
- Schaar, L., & Kampakis, S. (2022). Non-fungible tokens as an alternative investment: Evidence from CryptoPunks. *Journal of The British Blockchain Association*, 5, 31949. (Published online Aug 2022) <https://doi.org/10.1080/00207543.2018.1533261>
- Schmitt, B. (1999). Experiential marketing. *Journal of marketing management*, 15(1-3), 53-67.
- Shin, S., Koo, C., Kim, J., & Gursoy, D. (2024). Effects of metaverse experience on behavioral intention of visitors: moderating role of similarity between virtual and real experience. *International Journal of Contemporary Hospitality Management*, 36(12), 4055-4073. <https://doi.org/10.1108/IJCHM-10-2023-1567>
- Sweeney, J. C., & Soutar, G. N. (2001). Consumer perceived value: The development of a multiple item scale. *Journal of Retailing*, 77(2), 203-220. [https://doi.org/10.1016/S0022-4359\(01\)00041-0](https://doi.org/10.1016/S0022-4359(01)00041-0)
- Vega, E., & Camarero, C. (2024). What's behind the jpg? Understanding consumer adoption of non-fungible tokens. *International Journal of Consumer Studies*, 48(2), e13014. <https://doi.org/10.1111/ijcs.13014>
- Verhallen, T. M. (1982). Scarcity and consumer choice behavior. *Journal of Economic Psychology*, 2(4), 299-322.
- Veryzer Jr, R. W., & Hutchinson, J. W. (1998). The influence of unity and prototypicality on aesthetic responses to new product designs. *Journal of consumer research*, 24(4), 374-394.
- Wu, H. C., Li, M. Y., & Li, T. (2018). A study of experiential quality, experiential value, experiential satisfaction, theme park image, and revisit intention. *Journal of Hospitality & Tourism Research*, 42(1), 26-73. <https://doi.org/10.1177/1096348014563396>

- Wu, Y., & Huang, H. (2023). Influence of perceived value on consumers' continuous purchase intention in live-streaming e-commerce—mediated by consumer trust. *Sustainability*, *15*(5), 4432. <https://doi.org/10.3390/su15054432>
- Yilmaz, T., Sagfossen, S., & Velasco, C. (2023). What makes NFTs valuable to consumers? Perceived value drivers associated with NFTs liking, purchasing, and holding. *Journal of Business Research*, *165*, 114056. <https://doi.org/10.1016/j.jbusres.2023.114056>
- Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. *Journal of Marketing*, *52*(3), 2-22. <https://doi.org/10.1177/002224298805200302>