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A Study on the Applicability of NFT in the Entertainment Industry: Application of the Means-end Chain analysis and Laddering

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A Study on the Applicability of NFTs in the Entertainment Industry: Application of the Means-end Chain analysis and Laddering

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Keywords: NFT, Means-end Chain analysis, Laddering, Entertainment Industry

Introduction

The advancements in digital technology have not only transformed business operations across various industries but also driven rapid changes and innovations within business landscape. Digital technology operates independently of economic development levels, and the emergence of novel technologies enables diverse business to explore new business model (Ali et al., 2020). There has been a movement towards anticipating a paradigm shift in technological frameworks to establish the groundwork for Web 3.0 and to incorporate these changes into business model (Yoo et al., 2022). To keep up with the paradigm shift on the technological front, companies are navigating significant growth in the business domains related to information collection, management, and storage. Moreover, digitalization has recently emerged as a new aspect in information investment, coinciding with the growth (Ali et al., 2020). In the situation of the changing landscape information and communication technology utilization, survival for businesses entails leveraging aspects if the innovation lifecycle. This involves applying new strategies based on it, introducing innovative business model, and harnessing digital technology (Kaijkawa et al., 2022). Non-Fungible Token (NFT) can be regarded as a prime example where the emergence of digital technology has reshaped business approaches for enterprises (Ali et al., 2023).

NFT is digital token that utilizes blockchain technology to prove ownership of digital assets (Albayatia et al., 2023; Colicev, 2023; Ghosh et al., 2023). In the indiscriminate copying and replicating environment of the digital realm, proving the originality and ownership of digital assets can be challenging. However, NFT technology enables the attribution and validation of ownership for digital assets and collectibles, empowering the issuance and circulation of individually owned digital assets (Im & Go, 2022). NFT is unit of data stored on the blockchain and are characterized by their uniqueness, making them non-fungible and irreplaceable (Wilson et al., 2021). Furthermore, each NFT is endowed with a distinct and unique identifier, allowing for the authentication of the original asset. This authentication is facilitated by encrypted transaction records executed through smart contracts, ensuring transparency in transactions (Seong, 2022).

NFT possesses characteristics such as blockchain-based technology, proof of ownership for digital assets, and liquidity through tokenization. NFTs have been recognized for their boundless potential, particularly within the media industry and entertainment sector. Furthermore, they have garnered significant attention as a foundational technology within the Web 3.0 ecosystem. Gartner (2021) designated NFTs as a technology to watch closely in 2021 Hyper Cycle. The emergence of NFT-based digital content sales introduces novel revenue models for relevant industries and is expected to play a substantial role in constructing the Web 3.0 digital ecosystem. NFTs generated a staggering $17 billion in revenue in 2021 (Celicev,

2023; EY, 2022; McKinsey, 2022).

While previously ownership claims over digital data were challenging to assert, the application of NFT has facilitated the assertion of ownership for digital data, leading to a vibrant ecosystem of NFT-based transactions (Lee & Kim, 2022). The attributes of NFT are reshaping the dynamics within the digital content industry ecosystem, influencing creators, buyers, and businesses in novel ways. NFT creators can directly engage with users and trade their creations without intermediaries, whereas NFT users can enjoy ownership in a market based not on mass digital content sales but on the rarity associated with fan communities or enthusiasts (Lee & Kim, 2022). NFT users can also leverage NFTs as a means of economic interaction with creators. Businesses, while devising models for generating multi-tier revenue from existing intellectual property, can consider NFT-based IP sales to generate revenue from the original IP (Keum, 2022). From an economic perspective, NFT also serves as an alternative role to traditional assets, representing financial instruments of the digital era (Wang, 2022; Yarovaya et al., 2022). Taking advantage of the NFT attributes, the majority of digitally fungible intellectual properties are being realized as various products and services using NFT and blockchain technology. This trend is forming a vast market centered around NFT (Wang, 2022; Wang et al., 2022). NFT products, leveraging characteristics such as uniqueness, scarcity, transparent transactions, and decentralization, have created a massive economic market that previously didn't exist. Digital artists and creators of digital collectibles are benefiting from this, marking a profound transformation driven by NFT technology (Seong, 2022).

NFT has found utilization as a business model across various companies, with the media industry and entertainment market companies notably expanding into NFT businesses. The initial NFT market emerged as a platform for issuing digital assets like collectibles and in-game characters (Im & Go, 2022). According to NonFungible's (2021) 2021 Annual NFT Market Report, NFTs rapidly expanded since 2021, with trade volumes primarily encompassing collectibles, blockchain games, arts, utility & finance, and the metaverse. Each sector where NFT is traded are largely associated with the entertainment industry. Companies are issuing their digital assets as NFTs within various usage categories, generating additional revenue and fostering closer engagement with entertainment fans (Han, 2022a). The entertainment domain, including film and broadcasting, entertainment agencies, music, games, and the metaverse, issues NFT. Particularly, entertainment companies are showing interest in issuing NFT utilizing their owned intellectual properties such as specific artists, characters, items, athletes, and fictional universes. As digital content assets hold immense importance for entertainment corporations, they are investing in NFT and gradually expanding the service area of NFT. NFT within the entertainment sector offer opportunities to experience unique digital content like images, audio, video, or metadata, either individually or in combinations (Xia et al., 2022).

Most of the prior research on NFT has focused NFT transactions are conducted on blockchain technology. This has led to discussions about legal issues related to NFT copyrights (Im & Go, 2022), legal regulations concerning NFT (Song, 2022), assessments of the current state of NFT and their technological applications (Kang, 2022; Park, 2023). In international research, NFT transactions are relatively active, the emphasis has often been on understanding the investment value of NFTs alongside blockchain technology considerations. Specifically, studies have looked into the characteristics of the NFT market (Ali & Bagui, 2021; Nadini et al., 2021; Pinto-Gutiérez et al., 2022), enhancing transparency and data integrity in NFT transactions (González et al., 2022; Hasan & Starly, 2020), energy consumption related to carbon emissions during NFT issuance (Karandikar et al., 2021; Manzooor et al., 2020; Ren et al., 2022; Truby et al., 2022), and pricing NFT and other asset classes (Aharon & Demir, 2021; Dowling, 2022a;

Dowling 2022b; Umar et al., 2022). While it is crucial to identify potential issues that may arise within the NFT market ecosystem, research is needed to understand NFT-related service satisfaction and transaction intent from the perspective of users who purchase NFT. This research is essential to secure the mainstream adoption of NFTs, activate the market, and ultimately discuss the sustainability of NFT. Although some prior research has explored the impact on NFT transaction intent (Lee & Kim, 2022), these quantitative research methods have primarily focused on the functional attributes of NFTs, with limitations in measuring the subjective, intrinsic value that NFT buyers seek. Moreover, empirical studies analyzing the value system of the attributes of NFT in the entertainment area where NFT transactions are most active have been insufficient.

NFT have immense potential to impact Web 3.0-related industries and offer significant future business opportunities. However, they are still in the early stages of their lifecycle (McGinn et al., 2016). Despite the growing adoption and high-value transactions, research on NFTs is also in early stages (Lee & Kim, 2022). To engage in discussions about the sustainability of NFTs, there's a need for an approach from the perspective of users who purchase NFT.

This study aims to investigate the perceived values and value hierarchy attributed by entertainment NFT buyers. Specifically, this research seeks to comprehend user value hierarchy related to NFT properties by utilizing Means-end chain analysis and Laddering. This study endeavors to introduce a new approach from both theoretical and methodological dimensions. This implies an expansion of research on NFT purchases beyond the conventional focus on extrinsic and intrinsic motivations, desire fulfillment, product and service satisfaction, and delving into new facets of NFT purchase. Means-End Chain Analysis is a commonly employed analytical method primarily used to explore the significant meaning attached to attributes of products or services in connection with consumers (Gutman, 1982).

Concretely, in this study, we aim to discern the attributes and functionalities that entertainment NFTs can offer to buyers, along with the associated structural links among these attributes, functional and psychological consequences, and values. We intend to describe the specific value hierarchy that entertainment NFT buyers pursue. This research aims to provide insights into the potential applicability of NFT in the entertainment market based on the value hierarchy sought by buyers of entertainment NFT.

Research Background

2.1. Overview of NFT

NFT is a technology that uses blockchain to record a digital identifier, certifying ownership of digital assets (Ali et al., 2022). Similar to cryptocurrencies like Bitcoin, NFT rely on blockchain, employing robust encryption, smart contracts, and online ledgers to verify transaction validity and facilitate the recording of ownership and transfer of digital assets (Yencha, 2023). NFT originated with the Etheria project in October 2015 and were first introduced at the Devcon Ethereum developer conference in London in November of the same year (Seong, 2022). With the ability to prove ownership of digital data through NFT, digital asset transactions using NFTs have become increasingly active, with NFT values ranging from free to thousands of dollars (Lee & Kim, 2022). Due to the characteristics, NFT have recently found applications as unique cryptographic assets associated with properties such as music tracks, artworks, collectibles, and more in the digital environment (Wu et al., 2023). NFT is gaining attention for securing the uniqueness of digital content and ensuring transaction transparency in the digital environment.

As the possibilities of blockchain and NFT technology activation present large, NFT has been recognized as a key technology driving the development of the Web 3.0 ecosystem, including

the metaverse. Advocates of building the Web 3.0 ecosystem, such as Mark Zuckerberg, envision a future where people will routinely shop, conduct business, and consume entertainment in the metaverse through avatars (Newton, 2021). This outlook is intertwined with the growing interest in new forms of digital assets and ownership methods within potential metaverse spaces, and this form of ownership proof is considered a pivotal element in the Web 3.0 ecosystem (Belk et al., 2022). Recently, with significant growth in the business sectors related to information collection, management, and storage, coupled with a shift towards digitization in investment strategies, the landscape is evolving rapidly (Jaradat et al., 2022). In this changing landscape, NFT have been evaluated as a technology encompassing the digitization of assets, proof of ownership for digital assets, and transparent transactions of digital goods. With NFT increasingly intertwining with industries such as gaming, entertainment, and sports, they are being recognized as a game-changer driving the Web 3.0 ecosystem and shaping a virtual economy that closely resembles the real world (Jeon et al., 2022).

The NFT market has experienced rapid expansion since 2021. One of the major use cases for NFT in the first half of 2021 was generating revenue from digital collectibles (Wilson et al., 2022). For instance, the digital artist known as Beeple, Michael Winkelmann, auctioned off his montage of daily digital creations titled "The First 5000 Days" as an NFT on Christie's auction house, fetching a winning bid of $69.3 million. This sale marked the third-highest price ever paid for a work by a living artist (Belk et al., 2022). Following high-value NFT transactions for digital art, interest from consumers and businesses surged. The NFT market's revenue was initially estimated to reach $12 million in 2020, but it exceeded expectations by reaching $340 million (Cointelegraph Research, 2021). Additionally, with the spread of COVID-19 and advancements in ICT technology, the importance of remote spaces has increased, amplifying the significance of NFT technology in proving ownership of digital assets. With the growing economic and technological importance of NFT, they are expected to gain more prominence not only in art and collectibles auctions but also in fields such as gaming, metaverse, sports, entertainment, and beyond

2.2. NFT and Entertainment Industry

Since the success stories of media art NFT emerged, NFT has gained active use across various entertainment sectors, including characters, movies, music, games, and more. In the entertainment industry, NFT is being recognized as future revenue streams. Content studios and media companies are creating NFTs based on their own dramas, movies, games, and other content. Entertainment agencies are issuing NFT for a variety of products related to their artists, such as albums, photos, and merchandise. They are also establishing outlook on the world linked to NFT, generating new revenues within these virtual realms. Fans who purchase NFTs operate communities and virtual worlds where they can share information and consumption culture related to fandom. This has led to the creation of a fandom economy structure that benefits both parties. Entertainment companies are utilizing their intellectual property (IP), such as iconic characters, through NFT to offer various experiences and benefits to their owners (Kang, 2022). Experts suggest that the NFT created currently represent just a fraction of the potential, with predictions that in the next 10 years, we will see a wide range of NFT that merges with digital content to shape the Web 3.0 ecosystem (Han, 2022a).

Based on the current trends in the domestic and international NFT markets, it's evident that digital art, which played a significant role in the early success of NFT, continues to be a prominent area of NFT trading. However, in recent times, entertainment and media companies have been actively exploring new business opportunities using NFT, and buyers are purchasing various entertainment-related NFT that cater to their individual needs (Wu et al., 2023). Considering the

practical applications of NFT, among the various industries adopting NFT, the entertainment sector is expected to have significant market potential.

NFT is a new technology that utilizes blockchain to provide tradable rights to digital assets such as images, music, videos, and virtual creations. As NFT enable proof of ownership for digital assets, it has been recognized as a prominent technology driving Web 3.0 along with the metaverse (Albayatia et al., 2023). With the growing awareness of the business potential of NFT, various industries are creatively exploring new business innovation opportunities by planning and launching various NFT projects (Wu et al., 2023). Among these industries, the entertainment market is actively pursuing various new ventures using NFT. Leveraging the characteristics of NFT, which can play a role in virtual spaces, entertainment companies are integrating their intellectual property and digital content with Web 3.0 technology to seek new business avenues. The starting point for these business plans often involves digital content and services using NFT. NFT is creating opportunities for entertainment companies to raise capital, distribute content, and foster a sense of belonging within fan communities, all while linked to IP of the entertainment companies (Han, 2022a).

The trends revolving around Web 3.0, encapsulated by terms like metaverse, blockchain, and NFTs, are also establishing themselves as a new economic frontier for media companies (Han, 2022b). The Web 3.0 era, characterized by decentralization, decentralization, and consumer participation, is creating new movements of change across the entertainment industry. The application and dissemination of Web 3.0 technology are raising the possibility for entertainment and media companies to construct new business models. Exploring new ventures through the convergence of digital technologies is a crucial process for these companies to secure a foothold in markets with future growth potential. It's vital for entertainment companies to extend their content IP through the integration with new technologies, as well as to build a unified worldview through agreements with future consumers or fans (Lee, 2022). In order to diversify NFT-related businesses within the entertainment market, it is essential to first understand the responses of NFT users during this process. Furthermore, new markets integrated with new technologies may entail consumers with different needs compared to the past. Therefore, to discuss the applicability of NFT in the entertainment industry, it is crucial to assess how consumers who actively use NFT perceive NFT technology.

2.3. Means-end Chain Analysis

Means-end chain analysis is primarily employed in the field of marketing to elucidate people's value hierarchy, which includes the purposes and relationships related to various subjects such as products, services, issues, or personalities (Jung, 2014; Olson & Reynolds, 1983). This analysis emphasizes the existence of a stepwise system in people's perception and knowledge about attributes of a particular subject, the consequences those attributes evoke, and the values those benefits aim for (Gutman, 1982). It is used to interpret and explain the connections between various elements and stages concerning a user's values for a particular subject from a marketing and communication perspective. This is conceptually grounded in expectancy-value theory (Fishbein & Ajzen, 1975), which suggests that a consumer's attitude and evaluation toward a particular subject are fundamentally linked to the motives for using the subject and the expected outcomes based on that usage, with each motive being associated with assigned values (Schaefers, 2013).

Means-end chain analysis is characterized by its exploration of an individual's selection of a specific subject and, ultimately, the values. In this context, choosing a specific subject serves as a means, while the values pursued through that choice represent the ends (Bang & Kim, 2014). For instance, if a consumer selects potato chips because of their "crispy" feature, experiences

"deliciousness" due to that crispiness, and ultimately derives "pleasure" from this sensation, then crispiness becomes the means to experience deliciousness, and deliciousness becomes the means to achieve the higher-level end of pleasure (Crispiness → Deliciousness → Pleasure) (Jung, 2014).

In order to describe the connection between means and ends, this theory is fundamentally composed of step-by-step components linked to attribute, consequence, and value (Song, 2008). This three-step (attribute-consequence-value) model was the simplest form of the means-end chain. The model has been further refined and complex versions have emerged over time, used by various researchers (Olson & Reynolds, 1983). Most researchers agree that these complex classifications of value stages are somewhat unnecessary both academically and practically (Song, 2017). Currently, a four-step model, which divides into attribute, functional and psychological consequence, and values, is used as the standard model of the means-end chain analysis (Reynolds & Olson, 2001).

Means-end chain analysis has been used primarily in the field of marketing to explore consumers' values toward products and brands. Recently, however, the means-end chain analysis has been used in various fields when new information systems and media services emerge to understand the value systems perceived by users. Pai & Arnott (2013) aimed to understand the motivations and value systems of users who wanted to use new communication technologies. They used a means-end chain approach to explore the hierarchical connections between outcomes and values resulting from the use of social media. Their research explored users' perceptions of the features of social media, how users used them, and why users considered the features important. They conducted their study on global Facebook users and confirmed that features such as instant responses, photo uploads, and interactive games provided benefits that facilitated meeting and communicating with friends through online platforms, which were directly related to the value of belonging. Yu-ling (2015) used means-end chain analysis to analyze the structure linking game attributes, learning outcomes, and values, focusing specifically on a virtual investment game. Through their research, they found that students benefited from game attributes such as the use of virtual chips and trading platforms in gaining investment experience and practical knowledge. This was directly linked to values such as achievement and security. Based on the results of their study, Yu-ling (2015) provided insights that could help game developers design user-centered game experiences. Means-ends chain analysis has been applied beyond marketing, providing a valuable framework for understanding users' value perceptions in a variety of contexts, from social networks to digital educational games.

Prior research has contributed practical insights into providing users with more attractive and effective usage environments by understanding the value systems of users when it comes to new services and content emerging due to advances in information technology. Means-end chain analysis is instrumental in extracting the values held by users for specific subjects and providing a rich understanding of user objectives and values based on the relationships between the extracted objectives, means, and outcomes (Jung, 2014). The methodology is suitable for exploring the interconnected structure of perceived values by consumers for a specific subject. Means-end chain approach can be highly useful when uncovering the framework of user motivations and ultimate values they seek when new digital content and services emerge, driven by the development of intelligent information technology.

Methodology

This study explores the value hierarchy of entertainment NFT buyers using the means-end chain analysis. The research method consists of four stages: (1) Laddering interview, (2) Content

analysis, (3) Implication matrix, and (4) Hierarchical value map.

3.1. Laddering Interview

Means-end chain analysis is a framework used to understand the value hierarchy of consumers regarding a specific subject based on its attributes, functional, psychological, and social consequences, as well as the value stages that connect them. Therefore, it emphasizes the process of identifying key items at each stage that construct the connections between the subject of investigation and the users. Through this process, hierarchical value map (MVP) can be derived, providing a rich understanding of users' purposes and values regarding a particular subject (Gengler et al., 1995).

Laddering, a qualitative interview technique, is primarily employed in research based on the Means-End Chain analysis. Laddering was originally designed by Hinkle (1965) and has since been used extensively in various fields, including consumer research (Reynold & Gutman, 1984), and the application of intelligent information technology. Laddering involves asking a series of "why?" questions repeatedly to obtain responses from participants. It is structured in a semi-structured method and relies on participants' previous answers to generate subsequent questions sequentially, ultimately forming a hierarchical structure of responses (Korenini, 2012). In essence, Laddering is a valuable research method that elucidates the relationships between attributes, perceived consequences, and personal values, providing a comprehensive understanding of participants' thought processes and motivations (Wansink & Park, 2000).

The laddering technique is typically divided soft laddering and hard laddering. Soft laddering is an exploratory research method used in areas where previous research findings are insufficient. It aims to discover content that can complement existing facts or hypothese. This approach involves structuring and visualizing the interconnectedness of the key elements that interview participants perceive as attributes-consequences-values of a specific subject. Soft laddering usually involves a small number of respondents and seeks to understand the perceived characteristics of a specific subject through open-ended questions, subsequently elucidating the associated value hierarchy (Lee, 2021). In contrast to soft laddering, hard laddering presents structured questionnaires to participants. Participants are provided with a framework and are asked to indicate the associations they perceive within it. This structured format guides participants to follow one ladder at a time as they complete the questionnaire, encouraging a systematic approach to revealing their perceptions and associations (Walfer & Olson, 1991).

Laddering interviews are employed to explore user preferences regarding products and services and to uncover the user's value system concerning the subject under investigation (Reynolds & Olson, 2001). In laddering interviews, respondents are repeatedly asked why something is important to them, using these semi-structured questions (Reynolds & Gutman, 1988). The interview process typically consists of three main questions, namely attribute questions (What product attributes lead you to use this product?), consequence questions (Why are these attributes important to you, or what can you obtain from these attributes?), and value questions (Why are these consequences important to you, or what ultimate values do you derive from these consequences?). In the first question, respondents are asked about the attributes of products and services that have influenced their consumption decisions. In the subsequent question, they are inquired about the results obtained from these attributes. Finally, in the last question, they are asked why these results are important to them (Jung, 2014). In this study, a laddering interview was conducted based on four questions to understand the user value structure, which consists of four stages: attributes, functional consequences, psychological consequences, and values, regarding entertainment NFT.

This study employed qualitative research

methodology, specifically soft laddering, to exploratively examine the value structure of entertainment NFT buyers. Qualitative research methods are suitable for exploring new social phenomena when there is a lack of prior research and can provide contextual understanding of the phenomenon. Furthermore, the insights gained from such exploratory research can contribute to practical problem-solving, making it appropriate for this study (Shin et al., 2019).

The interviewees were individuals who had experience purchasing NFT in the entertainment sector. To recruit interviewees, the researchers conducted a survey and interviews targeting entertainment NFT buyers in online Discord communities related to NFT. Using the Snowball Sampling Method, 22 individuals with a history of purchasing entertainment NFT were selected as interview subjects. The 1:1 depth interview were conducted from May 26, 2023, to June 1, 2023, and each interview lasted approximately 20 minutes. After the interviews, the participants responded to questions about their NFT purchase history and demographic characteristics.

Before conducting individual interviews, this study identified key attributes, consequences, and values through a preliminary review of prior research related to NFT. Then, through interviews with entertainment NFT buyers, the main attributes, consequences, and values were derived. The items derived were analyzed after creating an implication matrix and subsequently constructing hierarchy value map (HVM). Demographic characteristics and the analysis of NFT purchase history were conducted using frequency analysis in SPSS 27.0.

3.2. Content Analysis

The data obtained through 1:1 depth interview based on the laddering technique were recorded in their entirety. These recorded materials were then transcribed into documents and used as the basis for content analysis. Multi-Coder procedure was employed to mitigate subjective judgments of the coder and enhance the reliability of content analysis coding. One of the authors, the first coder, initially conducted coding of the interviews using an open coding procedure without predetermined codes. Subsequently, the words and phrases from open coding were reorganized based on terminologies used in prior research related to information systems, variables employed in NFT-related prior research, and NFT characteristics. In the next step, a coding assistant conducted a secondary coding process based on the reorganized coding terms, and the results were compared between the two coders. In this process, inter-coder reliability measurements were conducted to ensure the reliability of content analysis. The inter-coder reliability measurement resulted in a Cohen's Kappa value of 0.95, which exceeded the acceptable level of inter-evaluator reliability (Fleiss, 1981). Through content analysis, the characteristics of means and ends in the field of entertainment NFT were categorized into four hierarchical levels: attributes, functional consequences, psychological consequences, and values.

3.3. Implication Matrix

Implication matrix analysis involves creating a relational structure of attributes, functional consequences, psychological consequences, and values that have been derived from content analysis. In this study, perceptions of means and ends in the field of entertainment NFT among buyers were categorized into attributes, functional outcomes, psychological outcomes, and values. To capture this hierarchical value system, a ladder of meaning was constructed using a total of four questions. Prior to conducting one-on-one, in-depth interviews, the interview respondents were asked questions to confirm the types and fields of NFT they had purchased. Subsequently, the laddering interviews were conducted.

The first question, "What attributes of the NFT led you to make the purchase?" served as the starting point. This was followed by the second question, "Why are the attributes mentioned earlier important? What are the good features of the NFT?" This question was asked in conjunction with the answers to the first question and served to

investigate the functional consequences of NFT. The third question, "Why are the functionalities of the NFT important? Do they bring about any psychological changes?" was similar to the second question and followed in tandem with responses, helping to uncover psychological benefits. The final question, "Why are the psychological changes brought about by the NFT important? What is the ultimate value obtained through NFT purchases?" was presented in connection with the previously discussed psychological benefits, aiming to understand what ultimate value respondents sought. Attributes, functional and psychological consequences, and values associated with entertainment NFT were interconnected hierarchically, with responses from each stage of the interview forming a cohesive structure. The implication matrix was employed to identify these step-by-step connections, based on the frequency of responses transitioning.

3.4. Hierarchical Value Map (HVM)

The final step in exploring the means-end chain relationship is summarizing the data collected through laddering interviews and drawing a hierarchical value map. Based on the summarized results in the implication matrix, the hierarchical structure from attributes to values of the study participants can be visualized in a graphical representation known as the hierarchical value map (Jung, 2014; Gengler & Reynolds, 1995).

However, when including all the connections from means to ends in the hierarchical value map, there is a concern that it may diminish the utility of the information the map is intended to convey (Jung & Park, 2018). To prevent this and following the approach proposed by Bagozzi & Dabholkar (1994), this study considered a balance between complexity and interpretability and chose a cutoff level that includes at least two-thirds (66.6%) of all means-end connections (Gengler & Reynolds, 1995). Accordingly, this study selected a cutoff level of 4, meaning that only relationships with a strength of 4 or higher in the implication matrix were included in the hierarchical value map. The cutoff level in this study demonstrated a high level of congruence (Table I), explaining 76.7% of all connection levels, which is considered acceptable when compared to prior research on exploratory means-end chain analysis for new information systems and digital content usage (Jung & Pawlowski, 2014; Nam & Jung, 2021). As previously mentioned, this study progressed through laddering interviews, content analysis, and implication matrix analysis to construct the final HVM of perceived values in the entertainment NFT, consisting of attributes, functional consequences, psychological consequences, and values.

Table I
Statistics for Determining Cut-off Level

Cut-off level	Number of active linkages	Percentage of active linkages (%)	Number of active cells at the level	Percentage of active cells (%)
1	249	100.0	80	100.0
2	220	88.4	51	63.8
3	203	81.5	34	42.5
4	**191**	**76.7**	**22**	**27.5**

Study Result

4.1. Demographic Characteristics

This study aimed to explore the value hierarchy of entertainment NFT buyers by conducting 1:1 in-depth interview with users who have experience purchasing NFT in the entertainment-related field. A total of 22 respondents participated in the interviews, and their demographic characteristics are summarized in Table II. Gender distribution revealed that 72.7% (16) were male, while 27.3% (6) were female, indicating a relatively higher number of male respondents. In terms of age, the majority of respondents fell into the 20s (40.9%, 9) and 30s (54.5%, 12) age groups, with only one respondent (4.5%) in their 40s. Educational backgrounds showed that 4.5% (1) had completed high school or below, 86.4% (19 individuals) had either completed or were currently attending university, and 9.1% (2) were pursuing or had completed postgraduate

studies. Regarding occupation, the distribution was as follows: student (4.5%, 1), office workers (54.5%, 12), professional (4.5%, 1), executive or administrative (9.1%, 2), sales or service jobs (4.5%, 1), own business (9.1%, 2), housewife (4.5%, 1), and others who were unemployed, retired, or had other statuses (9.1%, 2).

Table II
Demographic Information on Participants

Item		Frequency	Percentage
Gender	**Male**	16	72.7
	Female	6	27.3
Age	**20-29**	9	40.9
	30-39	12	54.5
	40-49	1	4.5
Education	**High School**	1	4.5
	University	19	86.4
	Graduate	2	9.1
Career	**College Student**	1	4.5
	Worker	18	81.9
	Housewife	1	4.5
	Others	2	9.1

The NFT purchase, cryptocurrency investment and NFT purchase characteristics of the respondents are summarized in Table 3 and 4. The information regarding respondents' NFT purchase history, cryptocurrency investment history, and NFT purchase characteristics is presented in Table III and Table IV. Respondents' NFT purchase history indicates that less than 6 months accounted for 4.5% (1), 4.5% (1), between 6 months and 2 years for 27.3% (6), and over 2 years for 59.1% (13). Similarly, the majority, except for one person, 95.5% (21), have experience in cryptocurrency investments. Regarding the NFT marketplace used by respondents, OpenSea was used by 36.2% (17), Magic Eden by 19.1% (9), Binance by 12.8% (6), Launchpad by 6.4% (3), Crypto.com by 4.3% (2), Rarible by 2.1% (1), SuperRare by 2.1% (1), and others by 17.0% (8). The NFT categories were as follows: Arts 23.2% (13), Music 7.1% (4), Game 17.9% (10), Movie 1.8% (1), Sports 7.1% (4), Membership 25.0% (14), Metaverse 12.5% (7), and others 5.4% (3).

Table III.
NFT Purchase and investment information on Participants

Item		Frequency	Percentage
NFT Purchase	**Under 6 months**	1	4.5
	6 months-1 year	1	4.5
	1 year – 1 year and half	6	27.3
	1 year and half – 2 years	1	4.5
	Over 2 years	13	59.1
Cryptocurrency Investment	**Yes**	21	95.5
	No	1	4.5

Table IV.
NFT Purchase Characteristics on Participants (overlapping inclusion)

Item		Frequency	Percentage
NFT Marketplace	**Opensea**	17	36.2
	Magic Eden	9	19.1
	Binance	6	12.8
	Launchpad	3	6.4
	Cryto.com	2	4.3
	Rarible	1	2.1
	SuperRare	1	2.1
	Others	8	17.0
Category	**Arts**	13	23.2
	Music	4	7.1
	Game	10	17.9
	Movie	1	1.8
	Sports	4	7.1
	Membership	14	25.0
	Metaverse	7	12.5
	Others	3	5.4

Table V
Entertainment NFT attribute-consequence-value

Step	Item		Step	Item	
Attribute	**A1**	Uniqueness	**Psychological Consequence**	**PC1**	Satisfaction
	A2	Price volatility		**PC2**	Cultural gratification
	A3	Invariability		**PC3**	Ownership
	A4	Ease of online transaction		**PC4**	Expectation of profit
	A5	Artistry		**PC5**	Web 3.0 pride
	A6	Creativity		**PC6**	Self-efficacy
	A7	Experientiality		**PC7**	community belonging
	A8	Scarcity		**PC8**	Partnership
Functional Consequence	**FC1**	Secondary NFT obtainability	**Value**	**V1**	Motivation
	FC2	Secondary NFT creativity		**V2**	A sense of belonging
	FC3	Play-to-earn (P2E)		**V3**	Possession
	FC4	Profile picture (PFP)		**V4**	Profit
	FC5	Membership benefit		**V5**	Self-expression
	FC6	Social capital		**V6**	Fun
	FC7	Asset		**V7**	Fanship-expression

4.2. Laddering Analysis Result

Following the coding procedure described earlier, the interview data were coded. After measuring inter-coder reliability, the first coder and coding assistant compared the results. For any discrepancies between the coders, they engaged in discussions to reach a consensus, ultimately selecting the finalized coded data. The content analysis resulted in a total of 30 attributes, benefits, and values being derived from the 1:1 in-depth interview, including 8 attributes, 7 functional consequences, 8 psychological consequences, and 7 values (Table V).

For the Implication Matrix analysis, the connections between the identified attributes (A), functional consequences (FC), psychological consequences (PC), and values (V) from the content analysis were analyzed in three stages: 'attribute (A) - functional consequence (FC)', 'functional consequence (FC) - psychological consequence (PC)', and 'psychological consequence (PC) - value (V)'. Taking into consideration the overall interpretability, the results for stage one, 'attribute (A) - functional consequence (FC)', with a cutoff criterion of 4 or more, are presented below. Table VI shows the frequency of items in the connection between attributes (A) and functional consequences (FC). The most frequently link in this stage are <Price Volatility (A2), Asset (FC7), n=11>, <Uniqueness (A1)-PFP (FC4), n=7>, <Uniqueness (A1)-Membership benefits (FC5), n=7>, <Scarcity (A8)-Membership benefits (FC5), n=7>, <Scarcity (A8)-Asset (FC7), n=7, <Invariability (A3)-Asset (FC7), n=6> and <Experientiality (A7)- P2E (FC3), n=6>.

Table VI
Implication Matrix of Entertainment NFT attribute-functional consequence

	FC1	FC2	FC3	FC4	FC5	FC6	FC7	Total
A1				**7**	**7**		3	**17**
A2	1	1	3	1	1		**11**	**18**
A3							**6**	6
A4							2	2
A5		1			1		2	4
A6		2		1			1	4
A7	1		**6**		3		3	**13**
A8	2				**7**	3	**7**	**19**
Total	4	4	**9**	**9**	**19**	3	**35**	83

Table VII shows the frequency of items in the connection between functional consequences (FC) and psychological consequence (PC). The most frequent items are <Asset (FC7)-Expectation of profit (PC4), n=13>, <P2E (FC3)-Self-efficacy (PC6), n=6>, <Membership benefit (FC5)-

Community belonging (PC7), n=6>, <Asset (FC7)-Satisfaction (PC1), n=6>, <Membership benefit (FC5)-Satisfaction (PC1), n=5>, <Asset (FC7)-Ownership (PC3), n=5>, <Asset (FC7)-Community belonging (PC7), n=5>, <PFP (FC4)-Satisfaction (PC1), n=4>.

Table VII
Implication Matrix of Entertainment NFT functional consequence-psychological consequence

	PC 1	PC 2	PC 3	PC 4	PC 5	PC 6	PC 7	PC 8	Total
FC1				2			2		4
FC2				1		1	1	1	4
FC3	1			1		**6**	1		**9**
FC4	**4**			1	2		2		**9**
FC5	**5**	1		1		3	**6**	3	**19**
FC6				1	1		1		3
FC7	**6**	2	**5**	**13**	3		**5**	1	**35**
Total	**16**	3	**5**	**20**	6	**10**	**18**	5	83

Table VIII shows the connection frequency of the psychological consequence (PC)-value (V) stage of entertainment NFT. The most frequent items were <Expectation of profit (PC4)-Profit (V4), n=20>, <Community belonging (PC7)- A sense of belonging (V2), n=6>, <Satisfaction (PC1)-Profit (V4), n=5>, <Community belonging (PC7)- Profit (V4), n=5> , Community belonging (PC7)-Self-expression(V5), n=5>, <Web of 3.0 pride (PC5)-A sense of belonging(V2), n=4>, and < Self-efficacy (PC6)-Profit (V4), n=4>.

Table VIII
Implication Matrix of Entertainment NFT psychological consequence-value

	V1	V2	V3	V4	V5	V6	V7	Total
PC1		2	2	**5**	3	3	1	**16**
PC2			2		1			3
PC3			2	2			1	5
PC4				**20**				**20**
PC5		**4**		2				6
PC6	1	1		**4**	3	1		**10**
PC7		**6**		**5**	**5**	2		**18**
PC8		2					3	5
Total	1	**15**	6	**38**	**12**	6	5	83

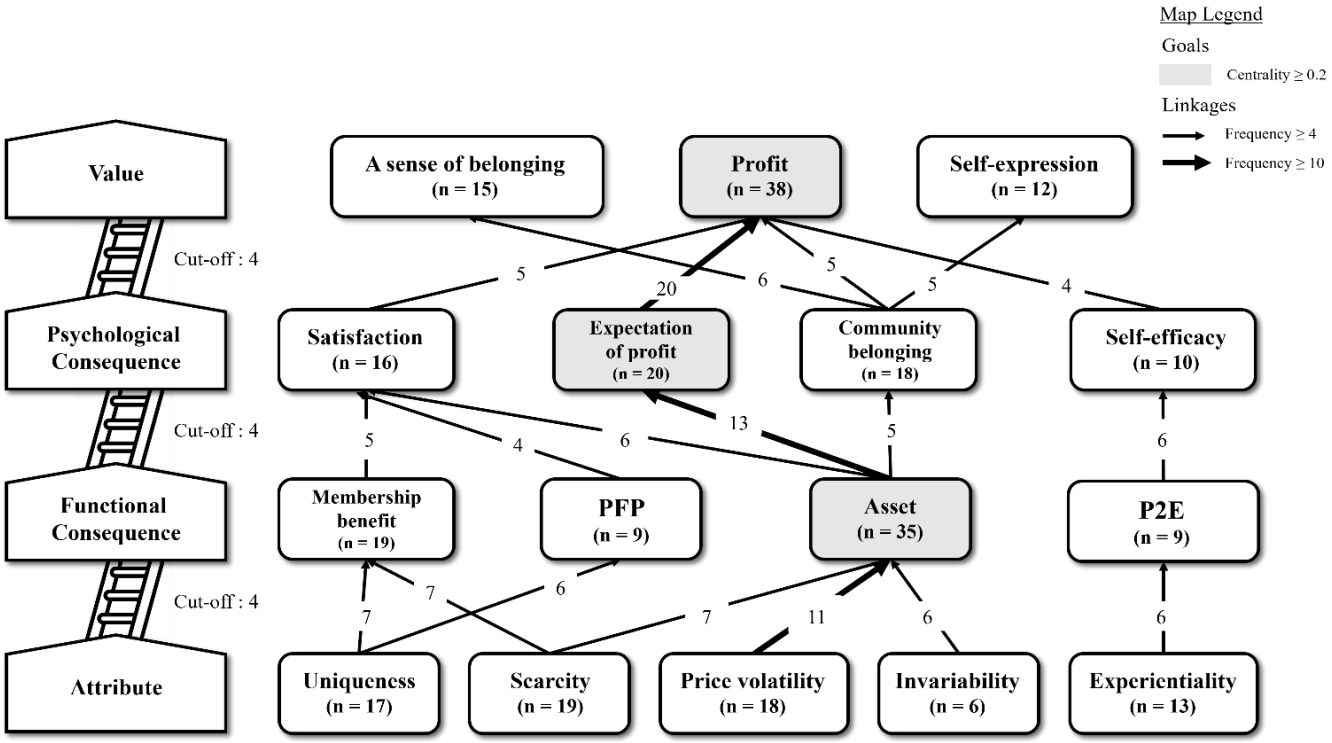

Figure 1. HVM of entertainment NFT consumers

HVM is the result of visualizing the connection structure of items with a connection frequency above the cut value standard as a hierarchical map based on the results of the implication matrix. Fig 1 is a comprehensive HVM of the means-functional consequences-psychological consequences-value of entertainment NFT. Centrality classified the purpose of the step-by-step purpose, and the thickness of the connection line also expresses a relatively stronger value hierarchy

The analysis of the implication matrix and the HVM in this study revealed the important links at each stage of Entertainment NFT. there are the key findings: In the attribute stage, the most critical attributes were identified as 'Scarcity (n=19)', 'Price volatility (n=18)', 'Uniqueness (n=17)', and 'Experientiality (n=13)'. In the functional consequence stage, the essential functional consequences were 'Asset (n=35)', 'Membership benefits (n=19)', 'P2E (n=9)', and 'PFP (n=9)'. In the psychological consequence stage, the significant items included 'Expectation of profit (n=20)', 'Community belonging (n=18)', 'Satisfaction (n=16)', and 'Self-efficacy (n=10)'. In the value stage, the core values were identified as 'Profit (n=38)', 'A sense of belonging (n=15)', and 'Self-expression (n=12)'.

Entertainment NFT buyers anticipate the consequence of Asset (FC7) due to attributes like Scarcity (A8), Price Volatility (A2), and Invariability (A3). This anticipation leads them to psychological consequences such as Satisfaction (PC1), Expectation of profit (PC4), and Community Belonging (PC7). Ultimately, they pursue the value of Profit (V4). There is a strong connection observed, particularly from Price volatility (A2) to Asset (FC7), and finally to Expectation of profit (PC4) and Profit (V4). Within the connection structure, psychological consequences like Community belonging (PC7) are connected not only to Profit (V4) but also to values such as A sense of belonging (V2) and Self-expression (V5). Additionally, due to Uniqueness (A1) and 'Scarcity (A8), there's an expectation of the results of Membership benefit (FC5), leading to Satisfaction (PC1), and ultimately, the pursuit of Profit (V4). Experience (A7) is connected first to P2E (FC3) and Self-efficacy (PC6) and finally to the pursuit of Profit (V4). Asset (FC7) are linked to some extent to Ownership (PC3) but do not reach the ultimate value. It's worth noting that, among the attributes, Uniqueness (A1) is partially connected to Personalization (FC4) but doesn't reach the level of psychological consequences.

The value hierarchy of Entertainment NFT is confirmed to reach ultimate value through various pathways. For instance, in the case of Scarcity (A8), there are multiple routes to reach the final value of Profit (V4). One route involves 'Scarcity (A8) - Membership benefit (FC5) - Satisfaction (PC1) - Profit (V4)', and simultaneously, another route involves 'Scarcity (A8) - Asset (FC7) - Expectation of profit (PC4) - Profit (V4)'. These results suggest that Entertainment NFT buyers have a diverse spectrum of inherent values that can lead them to different paths to reach their ultimate values.

Discussion and Implication

The purpose of this study is to discuss the applicability of NFT in the entertainment area, which is rapidly emerging, from the user's perspective, among the various areas where NFT are being applied. Therefore, this study utilized the means-end chain approach and laddering analysis to explore the perceived NFT value system in the context of entertainment NFT purchase. In order to explore the NFT buyers' value hierarchical structure, we conducted laddering interviews, content analysis, implication matrix analysis, and derived the value hierarchy in entertainment NFT, and identified the following prominent findings.

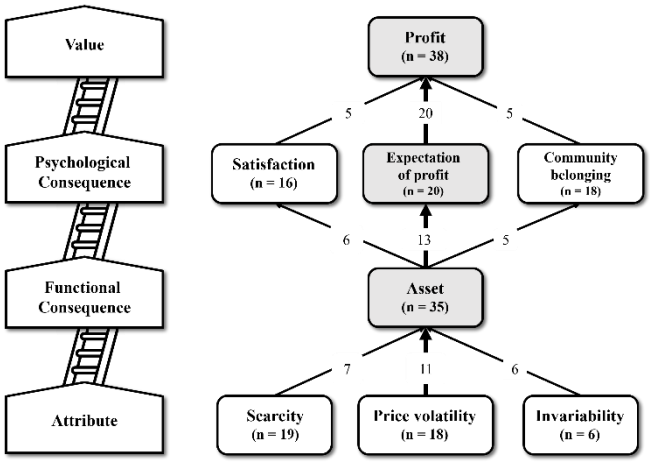

Figure 2. Pursuit of profit value

According to the finding of this study, entertainment NFT buyers ultimately purchase entertainment NFT to pursue profit and belonging, and so a means of self-expression (Fig 1.). Among the various value structure, we found the NFT buyers believe that NFT have the potential to be investments because the prices are constantly fluctuating, so they expect profits as a way to increase their wealth, and they feel a sense of belonging with other people who own the same NFT, which leads to the pursuit of profit (Fig 2.). These results are consistent with previous research on NFT. Based on the theory of planned behavior, Albayatia et al. (2023) found that social influence on the decision to participate in the NFT metaverse among NFT creators, traders, and enthusiasts positively influenced behavioral intention, subjective norms, perceived behavioral control, and trust, each of which positively influenced NFT engage intention and behavior. By purchasing NFT, NFT holders gain access to a private community. In the community, the holders can have the opportunity to obtain information about secondary NFT issuance, priority purchase to obtain information about secondary NFT issuance, priority purchase rights (called as White List) from the developers and operators of the NFT project they purchased, and also interact with each other within the community and share information about potentially investable NFT (Celicev, 2023). Our findings also confirm that entertainment NFT buyers purchase NFT with the intention of investment in future, and that their ultimate goal is to create a shared sense of belonging and profit based on their common purchase within the NFT private community.

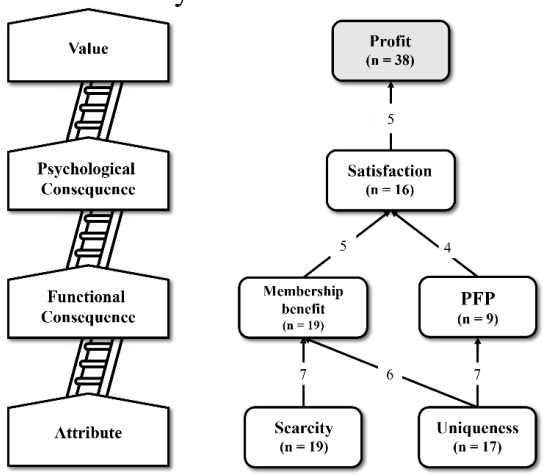

Figure 3. Value structure of membership NFT and PFP

The result of this study confirmed that entertainment NFT buyers focus on the unique and scarce nature of NFT, and are satisfied with membership benefits that are only available to NFT holders (Fig 3.). These NFT value structures are confirmed by the psychological benefits of NFT which were mainly identified by NFT buyers in the music entertainment and utility sectors. For example, utility NFT such as PUUVILLA(projected by department SSG), Bellygom(projected by Lotteimall), representative NFT of South Korean retail companies, were found to be satisfied with benefits such as premium services, mobile vouchers and discounts on their products. Entertainment agency NFT holders were found to be satisfied with benefits such as music video making films, private album and photos and priority concert tickets for artists affiliated with their respective companies. Recently, entertainment agency companies with a large number of K-pop artists have been actively utilizing NFTs and the metaverse to develop various NFT business strategies such as music sales, performance revenue, and Idol goods sales to explore new revenue models (Geum, 2022). Based on the results of this study, it is confirmed that NFT of utilities and entertainment agencies that rely on uniqueness and scarcity provide various benefits to NFT holders feel satisfied, meanwhile, the ultimate value they also pursue the profit. Considering the previous research that the operability of operators and brands running NFT projects can be linked to trust and loyalty to the NFT project (Jo, 2023), it is expected that in terms of running NFT projects and operating NFT holders, providing tangible benefits to NFT holders and conducting continuous operation and management will help maintain the trust and value of NFT.

The results of this study revealed that respondents who bought PFP NFT, which is relatively rare or highly reputable, believe that NFT have asset value based on their scarcity and can be used as a means of belonging and self-expression in the NFT community. The distinctive aspect is that PFP NFT are used as a means of self-expression, but the starting point is scarcity, not uniqueness. The findings of this study confirm that NFT have no-fungible characteristics because they utilize blockchain technology to have a unique value, and that they have the characteristics to

express themselves through the purchased NFT avatars and PFP images. However, entertainment NFT buyers generally do not purchase and utilize only one NFT, and they externally utilize NFT with relatively higher monetary value rather than aesthetics and artwork, which is interpreted as showing off their presence in the NFT community. Baytas et al., (2022) explained that character PFP NFT, such as Lava Labs' crypto-punk, serve as authoritative symbols within virtual spaces, communities, innovations, and entrepreneurial group to signal their membership. NFT communities are also characterized by the private community of their operation, with users rarely revealing their real identities due to the shuttered structure of the community. The findings also support prior research on consumer goals for virtual consumption in nascent social virtual worlds, which found that purchased virtual goods have the property of scarcity, which leads to the value of self-expression (Jung & Palwloski, 2015). Based on these results, the pursuit of self-expression value in the NFT community due to the scarcity and asset properties is interpreted as a way for holders of entertainment NFT to realize the value of self-expression through indirectly revealing themselves by utilizing NFT in the community's space without revealing their real identity.

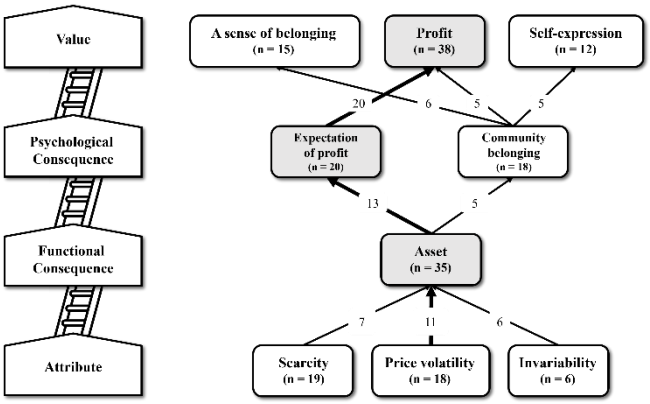

Figure 4. Value structure of NFT Community

However, we also found that some of our findings differ from prior research on NFT. This study found that entertainment NFT buyers consider NFT as an asset class due to their scarcity and invariability, and ultimately seek to profit from them. However, prior research on the price determinants of NFT has found that the aesthetics of individual NFT, or subjective judgment of the artistic dimension of NFT, is a crucial explanatory variable for the price of character PFP NFT (Kong & Lin, 2021), and the race of the NFT character is also an important factor in NFT price determination (Nguyen, 2022). This indicates that there may be a difference between what determines the actual price of an NFT and the attributes of the NFT that users purchase in hopes of earning a profit. Given the scarcity and invariant nature of NFT, this means that while there may be buyers who purchase NFT with the intention of pursuing profits, this purchase behavior may not be linked to the pursuit of profits through NFT. In this context, it is significant for future research to compare the price determinants of NFT as perceived by users with the actual price determinants of NFT to explore the investment potential and market stability of the NFT market and appropriate regulatory measures for the NFT market from the user side, as well as to suggest appropriate behavioral patterns of individual stakeholders in the NFT ecosystem.

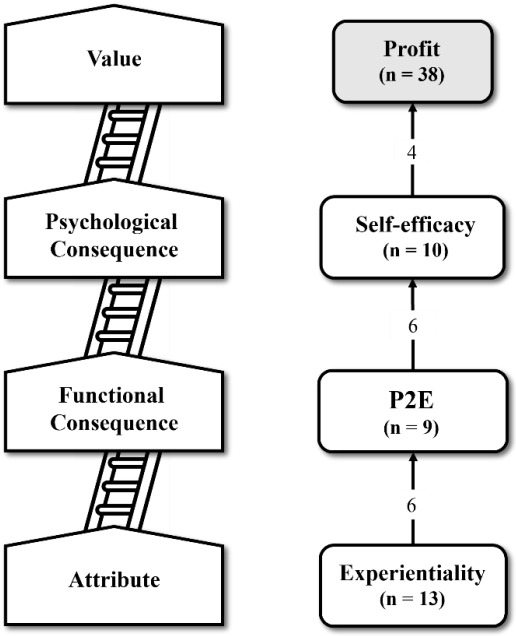

Figure 5. Value structure of game NFT

Focusing on game NFT buyers, a value structure was identified in which game NFT provide experiences and are linked to earning activities (P2E), such as earning coins and additional NFT, which promote self-efficacy and, finally, are linked to profit-seeking values. This value system has the potential to trigger achievement motivation in the game NFT space. More recently, NFT-based item systems have been implemented in metaverse and gaming

environments, not just for trading items with NFT-enabled avatars, but also for use in other worlds or games (Belk et al., 2022). A prior study that conducted a means-end chain analysis of Pokémon Go users found that playing games with new technologies, such as augmented reality games, can lead to increased self-fulfillment (Ku et al., 2021). The results of this study also confirm that the acquisition of NFT through gameplay provides experientiality, which can be linked to self-efficacy on a monetary level.

In the past, early metaverse games gained a short-lived buzz but were shut down before they became popular. However, technological advances in gaming NFT are facilitating their scalability, with research showing that social activities such as improved payment systems and collective play in metaverse environments can be linked to users' sense of self-efficacy (Assouzin, 2022). The key elements of a metaverse are the users, the content they enjoy, and the technology that ultimately enables them to experience it. This means that the integration of game-like content in a virtual world such as a metaverse, and the simultaneous expansion of digital asset transactions through NFT, can lead to the expansion of the service ecosystem using NFT. In this regard, there is a possibility that the experiential value provided by game NFTs can be combined with other types of NFT, and there is also a possibility that game NFT can be connected to the value of pursuing fun, so it is expected that NFT research in various dimensions that consider the scalability of such metaverses and games will be required.

The dominant nodes identified in this study are generally associated with monetization of NFT. In order to build an NFT ecosystem and advance Web 3.0, various technical foundations and enabling NFT trading are being developed at a rapid pace (Belk et al., 2022). However, in order to realize a sustainable ecosystem of NFTs along with these technological movements, it is expected that various stakeholders in the ecosystem should have a common orientation. Various studies related to NFT investments have repeatedly confirmed the instability of the NFT market (Dowling, 2022a). Furthermore, NFT are distinct from cryptocurrencies and real assets, and their prices are relatively less predictable (Horky et al., 2022; Naguyen, 2022). It is expected that efforts by various stakeholders, including governments, will be needed to address the speculative aspects of NFT. While there are various legal issues regarding the definition of NFT, their inclusion as virtual assets, and their value as investment products, it is important to consider the fact that they also serve various purposes, such as trading digital content and digital artworks (Kim and Kim, 2022).

Proper regulation of the cryptocurrency market can help protect investors and general users and improve usability (Chang, 2018). Providing accurate information on the NFT market, ensuring the authenticity of assets issued as NFTs, and protecting the property legal interests of authors and nominees will lead to the stable development of NFT-related industries (Hyun, 2022). Therefore, it will be important for stakeholders in the NFT ecosystem to be organically connected, and for the government to explore regulatory measures related to NFT investment from an integrated perspective. This is expected to preserve the positive impact of NFT on the Web 3.0 ecosystem by establishing the initial development purpose of NFT and maintaining the net functionality of various NFT. Furthermore, in the case of NFT in the entertainment sector, it is expected that various legal and industry-level studies on the asset and investability of NFT will be required to mitigate speculation and advance the discussion on trust and sustainability.

Limitation and Future Research

This study utilized means-end chain analysis and soft laddering techniques to identify the perceived value of entertainment NFT buyers in a hierarchical structure. It also identified the practical, social, and value that users actually perceive. This study is expected to contribute to the development of a more practical and value-oriented approach to identifying the perceived value system of users in the domestic entertainment NFT ecosystem.

The research was conducted as an exploratory study utilizing a soft laddering technique. However, in the future, when the technical barriers to entry for NFT trading are lowered and NFT trading becomes more popular, it is expected that a more multifaceted study on the applicability of NFT in the entertainment market can be conducted by identifying the perceptions of

users by more segmented NFT markets. This will play an important role in validating the findings of this study at a more empirical level and generating more concrete results.

In terms of methodology, this study is expected to be useful in studies that apply means-end chain analysis and laddering techniques to research areas related to blockchain technology to identify the means, ends, and values of specific groups in the media and content industries where blockchain technology is utilized. As such, this study is expected to contribute to the methodological expansion of exploring user value systems in areas where blockchain technology is applied.

Finally, the findings of this study can be used as a basis for research in the entertainment industry and related fields related to NFTs. In particular, it is expected that as the NFT market develops in the future, research on how NFTs can be applied in the entertainment industry will be conducted, and industrial applications will be made to promote the common utility of key stakeholders in the NFT ecosystem.

Acknowledgements

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