

Hwang, RakGun; Lee, MinkYung

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Article

The Influence of Music Content Marketing on User Satisfaction and Intention to Use in the Metaverse: A Focus on the SPICE Model

RakGun Hwang ^{1,*}  and MinKyung Lee ² ¹ Culture Business Department, Kyonggi University, Seoul 03737, Korea² Marketing Department, Sogang University, Seoul 04107, Korea; pminkyung0726@gmail.com

* Correspondence: tomato0927@kyonggi.ac.kr

Abstract: The global market is experiencing stagnation and recession in the “untact era”, and the emergence of the metaverse provides platform support and presents a new paradigm. This study aims to provide a framework for content creators and marketers to verify the effectiveness of metaverse marketing. An analysis was carried out of the fit of the model and the hypotheses between the metaverse seamlessness, presence, interoperability, concurrence, and economic flow (SPICE) model factors, customer satisfaction, and purchase intention. In the test, 9 out of 11 hypotheses were accepted. In conclusion, the data are meaningful, and this study presents the value of music content marketing in the metaverse through the metaverse SPICE model.

Keywords: metaverse; music content; metaverse marketing; SPICE model



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1. Introduction

Since the outbreak of the COVID-19 pandemic, individuals’ lifestyles have continued to change over the last 2 years to adapt to the new reality. In line with the changed era represented by the recently coined term “untact” (non-contact) in South Korea, telecommunicating, telecommuting for work, remote classes for school, and live e-commerce for shopping now comprise the social and market environment. The fourth industrial revolution and artificial intelligence (AI)-based technologies are fused in this contact-free era and exert a positive impact on our daily lives. In particular, the “metaverse” platform services combine 5G network technology, advanced lightweight graphic technology, and cutting-edge display device technology. The emergence of the metaverse platform presents a new global market paradigm in the ongoing recession caused by COVID-19 and has attracted attention as a new growth engine that connects industry and content [1]. The metaverse is not bound by time and space, which is conducive to a contactless era, and provides a virtual experience with a high degree of immersion and connectivity, resulting in increased user value. The metaverse can be based on PCs and mobile devices, and is characterized by access at anytime and anywhere. There are approximately 50 million games in Roblox, and the monthly usage time is 3 billion hours [2]. In addition, Zepeto serves 200 million subscribers in a virtual space. The metaverse is a technology-based platform optimized for a contactless era, and its scope in the industry and market is expanding. With the rapid development of the fourth industrial revolution, technology-based networks, and device technology, the pandemic has highlighted the importance of the metaverse. When the metaverse first appeared in the early 2000s, its mainstream application was confined to the gaming industry. However, it continues to expand to other industries, such as performance, medical care, fashion, and games, and is being utilized as one of the best marketing tools in the contactless era.

In this contactless era, state-of-the-art technology and AI-based fourth industrial revolution technology are extensively utilized. Smartphones are among the best platform

devices based on these technologies. They are an important necessity in our lives, allowing us to enjoy cultural and technological benefits in our hands, not just as a device for phone calls and text messages. Smartphones are arguably among the most important digital devices used to run the metaverse [3]. Mobile phones are equipped with high-speed and hyper-connected attributes based on 5G technology; thus, they can run in the metaverse by connecting to all electronic devices that can implement augmented reality (AR), virtual reality (VR), the Internet of Things, and self-driving mechanisms [4,5]. This study determines the impact of the metaverse when used as a marketing tool in the post-COVID-19 contactless era; in particular, it investigates the satisfaction of users who experience K-pop, the core content of the Korean Wave. Through an empirical analysis, we seek to understand the impact of music content marketing on user satisfaction, loyalty, and purchase intention. As metaverse marketing is a new trend across industries, this study strives to measure its effect on music content. Specifically, the perspective of users who enjoy music content and its expected effects on music content are determined. This study provides a framework by which content creators and marketers can verify the effectiveness of metaverse marketing strategies.

2. Theoretical Background

2.1. The Concept of the Metaverse

Metaverse is a compound word of meta and the universe, which signifies “virtuality” and “transcendence”, and is a more evolved term than VR. Alternatively, the metaverse is defined as an independent service provided for various social phenomena that appear in the market environment as technology develops [6]. The metaverse emerged in the early 2000s as a part of the gaming industry, providing independent communication services among users. However, with the invention of smartphones and social networking services that highlight convenience and accessibility, users have flocked to social media, and the number of users in the metaverse has gradually declined [7,8]. However, the market environment has abruptly changed since the outbreak of COVID-19, and the metaverse has returned in full swing as the digital platform that connects consumers, and producers have converged with 5G networks and sophisticated devices. Specifically, the metaverse can be considered a technology optimized for the market environment created by the commercialization of 5G, boasting ultra-fast, ultra-connected, and ultra-low latency services, boosted by the COVID-19 pandemic in early 2020. With the commercialization of 5G, technologies that can implement VR, AR, and mixed reality (MR) have emerged, and the metaverse is drawing more attention as a platform for contactless environments.

In its nascent stage, the term metaverse was used interchangeably with VR, but its use expanded in diverse ways. For example, the *Second Life* game, released in 2003, was created to generate profits through social exchanges and the economic activities of multiple users in a virtual space based on 3D graphics. Based on this, a VR version of *Sansar* was released [9]. In Niel Stephenson’s 1992 novel *Snow Crash*, the scope of the metaverse, a space where everyday life and economic activities were made possible through avatars, was further expanded [10]. Travis Scott, an American hip-hop artist, presented a metaverse performance on the Fortnite platform in 2020, with more than 12 million viewers watching the performance in real-time. It is estimated that the revenue from a single metaverse performance would be at least USD 1 million, with an estimated total of USD 20 million [11]. Kwok and Koh [12] argued that, as reality and virtuality interact and evolve within a space, they transform into a world that creates value through social, cultural, and economic activities. Thus, the current metaverse is defined as an extended virtual world in which emphasis is placed on artificial reality and AR [13]. Bolger [14] divided the metaverse into four types according to the space and nature of the information implemented on the platform. The first is “lifelogging”, which automatically records, stores, and shares information that individuals experience and feel in their daily lives in the digital world through social media services, such as Facebook, Instagram, and Twitter. The second is “AR”, which summons 3D objects in reality to provide realistic digital information, such as *Pokemon Go* and *Snow*. The third is

“mirror world”, in which Google Earth and Kakao Maps render a digital implementation of the real world to the virtual world and link it back to the real world. The fourth is “VR”, which implies experiencing a new virtual world that does not exist as an individual-centered virtual world in spaces, such as Zepeto and Roblox [9]. The current status of the metaverse is that there are countless key technologies for implementing them. It is diverse, spanning the basic technologies of 3D, blockchain, AI, 5G, MR, AR, and VR to the applied technologies of avatar and cryptocurrency [15].

2.2. The SPICE Model

The main feature that makes up the metaverse can be described using the seamless-ness, presence, interoperability, concurrence, and economic flow (SPICE) model (Figure 1). Seamlessness is a continuous connection between various experiences on a single platform, which means that even when a specific character is connected to a previous situation, it can continue the experience without disruption by retaining actions or experiences on the platform [16]. A sense of presence refers to a situation in which the user spatially or temporally feels they are on the platform even though physical contact is impossible. In other words, because the metaverse is a virtual space where the user cannot actually make physical contact, the sense of reality becomes a very important factor. Interoperability means that the data and information of the metaverse are interconnected in the real world [17]. In short, this means that a user’s experience and the information that needs to be obtained on a platform are not only applied to the virtual world, but complement each other by linking to the real world. Concurrence refers to an environment in which multiple users can simultaneously acquire different experiences and information regarding a meter. In the real world, owing to limited physical environmental factors, multiple users cannot have various experiences in one space; however, this is possible in the VR-based metaverse. As such, economic flows in the metaverse are generally characterized by beyond the traditional market principles in which sellers and consumers interact. Thus, there is an economic flow in which users can trade freely with others using the currency provided on the platform.

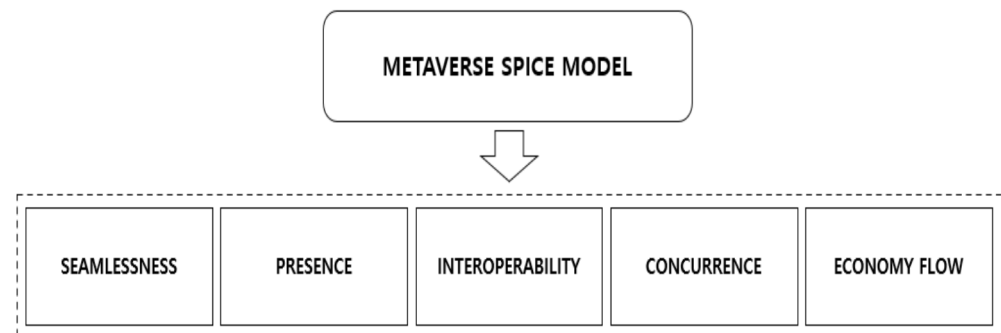


Figure 1. Metaverse SPICE model.

2.3. Cases of Metaverse Uses

The metaverse, an immersive next-generation version of the Internet rendered by VR and AR technologies, was created approximately 20 years ago. The forerunners of the metaverse were 2D electronic games for entertainment, driven by the development of the Internet and 3D graphics technology [18]. Thereafter, the “Lifeloggging” type of metaverse, such as Facebook, became widely popular as a medium for communication to share experiences, connect with friends and family, and build communities, accompanied by the spread and popularization of desktop computers and smartphones [19]. Imm et al. [20] classified the metaverse into two types, the game-type metaverse and the life-type metaverse, depending on several criteria, such as virtual world status, purpose, content creation, and content consumption. Game- and life-type metaverses began in the early 2000s and 2010s, respectively, resulting in the current metaverse of the 2020s ushering in a new era for present generations. Metaverse is no longer merely about gaming or

entertainment. Companies, schools, government offices, fashion, and popular culture have built businesses to provide goods and services for the metaverse, which has considerable implications for society. For Generation MZ, which includes millennials (those born in the early 1980s and the early 2000s) and Generation Z (those born in the mid-1990s and the early 2000s), who are familiar with the Internet and digital devices, the metaverse is becoming a way of online social life. As the metaverse allows users to immerse themselves in a space where the digital and physical worlds converge, they can realize daily life in a virtual space where the boundary between reality and virtuality has blurred [21].

Metaverse technology, which was initially used for games, is now actively utilized for diverse purposes in several fields, such as meetings, incentives, conferences, exhibitions, schools, corporations, sports, entertainment, fashion, and retail businesses, particularly due to the need for “contactless culture” (“untact”) after the COVID-19 outbreak. Korean girl groups “Blackpink” and “ITZY” successfully held a fan signing event and a fan meeting on Zepeto, a metaverse platform, in September 2020 and in February 2021, respectively [22]. Global fashion companies, such as Gucci and Christian Louboutin not only promote their brands and goods in the metaverse but also directly sell items worn by avatars [23]. At convenience stores, avatars cook and eat ramen in the metaverse, as in a real store, and stage performances, such as singing and dancing, in the busking space. In summary, the use of the metaverse in various industries is increasing. In addition, the global metaverse market size is estimated to reach approximately USD 280 billion by 2025, and is expected to result in the development of new markets and cultural industries as its utility increases among companies targeting young customers.

3. Research Design

3.1. Research Model

This study determines how the metaverse SPICE model for music content affects user satisfaction and purchase intention through theoretical considerations and empirical analyses of previous studies. Metaverse SPICE model factors were used to analyze the relationship between customer satisfaction and purchase intention. A research model was constructed to empirically analyze and determine whether the customer satisfaction formed by the metaverse SPICE model factors had a significant effect on purchase intention, as shown in Figure 2.

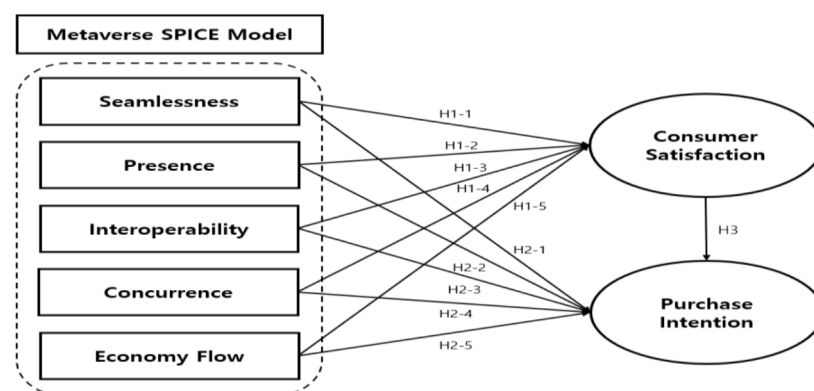


Figure 2. Research model.

3.2. Research Hypotheses

This study aimed to examine the influence of the music content marketing SPICE model factors and customer satisfaction and purchase intentions in the metaverse through theoretical considerations and reviews of previous studies. In Davis et al.’s [24] study of metaverse types and development directions, marketing tools are similar to existing platform channels, so they can be applied to metaverse users as well. In a study on the marketing strategy of performing arts in the post-COVID-19 era, Wamba et al. [25] conducted

big data analysis and found that the marketing means of performing arts and cultural contents are suitable for the “untact” era. Studies on the revitalization of music content in the metaverse by Yüksel et al. [26], Lee et al. [27], and You et al. [28] reveal that SPICE marketing factors are the optimal marketing factors that can be used in the metaverse platform. Was proposed as continuity, presence, and interactivity. In a study based on the “untact” era, Hampe and Schwabe [29] analyzed the relationship between music content marketing research based on popular music streaming services and concerts and the influence of content marketing in live commerce, in accordance with Lu and Chen’s [30] study on purchase intention. In the study of consumer preference analysis, interoperability, simultaneity, and economic flow were suggested as important marketing factors affecting purchase intention and reuse intention. In addition, Liikkanen and Salovaara [31] and Boroughf [32] stated that music content marketing is a strategic factor that can effectively appeal to subscribers on YouTube channels for promoting and improving YouTube music content. Thus, marketing methods and strategies using SPICE model factors are needed, because the most preferred content affects the use of marketing. Accordingly, the independent variable of this study comprised five factors—continuity, presence, interoperability, simultaneity, and economic flow. A research model was established, as shown in Figure 1, to analyze the relationship of influence.

Based on the theoretical background and previous studies, the following hypotheses were established:

H1. *The metaverse SPICE model for music content marketing has a significant effect on consumer satisfaction.*

H1-1. *Continuity has a significant positive effect on customer satisfaction.*

H1-2. *Sense of presence has a significant positive effect on customer satisfaction.*

H1-3. *Interoperability has a significant positive effect on customer satisfaction.*

H1-4. *Concurrence has a significant positive effect on customer satisfaction.*

H1-5. *Economic flow has a significant positive effect on customer satisfaction.*

H2. *The metaverse SPICE model for music content marketing has a significant effect on purchase intention.*

H2-1. *Continuity has a significant positive effect on purchase intention.*

H2-2. *Sense of presence has a significant positive effect on purchase intention.*

H2-3. *Interoperability has a significant positive effect on purchase intention.*

H2-4. *Concurrence has a significant positive effect on purchase intention.*

H2-5. *Economic flow has a significantly positive effect on purchase intention.*

H3. *Customer satisfaction formed by the metaverse SPICE model for music content marketing has a significant effect on purchase intention.*

3.3. Operational Definition and Measurement of Variables

The metaverse SPICE model factors were used, and operational definitions based on related studies were constructed to analyze the relationship between customer satisfaction and purchase intention. Jeong [33] argued that metaverse SPICE model factors are representative attributes that can be used as tools for marketing cultural content, and he measured them as subfactors of music content marketing in the metaverse [34]. Seamlessness is defined as not only performing various activities but also the flow of activities on a single platform. A sense of presence is a situation in which users can perceive it both spatially and socially, without any physical contact. Interoperability is the property of interlocking data and information between the real world and the metaverse [35]. Concurrence is defined as an environment in which multiple users are simultaneously active and can have various

experiences within 1 m. Economic flow is defined as an environment in which users freely trade goods and services, according to certain transaction rules [36]. Wang et al. [37] and Chen et al. [38] defined customer satisfaction as the tendency to take action or respond to possibilities and thus measured satisfaction on the platform by the willingness of the user to continue using it or recommend it to others. This study uses a five-point Likert scale to measure purchase intention by modifying and supplementing the studies of Amfo et al. [39], Kumra et al. [40], and Patanasiri et al. [41]. Furthermore, the subdimensional factors of the metaverse SPICE model comprise independent variables, and 15 items were measured on a 5-point Likert scale. The composition of the survey was based on related studies. Experience, memory, interest, and fun were set as measurement factors for the variables in the metaverse SPICE model for music content marketing. The measurement factors for consumer satisfaction [42] consisted of information acquisition, event participation, and increased likeability, while those for purchase intention comprised interest in music content [43], artist fandom membership, and the purchase of goods and services related to the content and artist.

3.4. Collection and Analysis of Data

Data collection and analyses were conducted as a non-face-to-face online survey targeting users who accept music content on the metaverse platform in South Korea. Data were collected by distributing and collecting surveys through social network service platform channels using the Google survey method, because non-face-to-face sampling was inevitable due to COVID-19. A total of 450 surveys were collected, and empirical analysis was conducted using 422 samples after excluding 28 responses that were considered incomplete and inaccurate.

The analysis was performed using SPSS and AMOS 24.0 statistical package programs. An exploratory factor analysis was performed on three sets of variables—SPICE model factors, customer satisfaction, and purchase intention—to investigate the validity and reliability of the data. In addition, the research model and hypotheses were verified by analyzing the relationship among the variables via confirmatory factor analysis using structural equation modeling.

4. Results

4.1. Characteristics of the Sample

The characteristics of the data are listed in Table 1. The 422 participants comprised 219 males (51.9%) and 203 females (48.1%). Regarding age, 236 participants were 20–30 years old (55.9%), 130 were 30–40 years old (30.8%), and 56 were 40 years old or older (3.6%), with individuals of 20–30 years old accounting for the majority (55.9%). Regarding educational background, 27 individuals (6.4%) had graduated from high school, 332 (78.7%) had enrolled or graduated from college, and 63 (14.9%) had enrolled or graduated from graduate school. The average monthly income was less than KRW 2 million for 206 participants (48.8%), less than KRW 3 million for 117 participants (27.7%), less than KRW 4 million for 65 participants (15.4%), and more than KRW 4 million for 34 participants (8.0%).

The results of the frequency analysis showing the main usage characteristics of the metaverse platform users are presented in Table 2. The results revealed that 152 participants (36.0%) used *Minecraft*, 123 (29.1%) used *Roblox*, 62 (14.7%) used *Fortnite*, and 55 (13.0%) used *Zepeto*. A total of 186 people (44.1%) had participated in musical events, while 236 (55.9%) had no such experience. Of those with no experience participating in music events, 128 (54.2%) did not participate because they had no information on the music events, while 93 (39.4%) did not participate because they were not interested.

Table 1. Demographic analysis results.

	Division	Number of People	%		Division	Number of People	%
Sex	Male	219	51.9	Job	Student and unemployed	151	35.8
	Female	203	48.1		Office worker and professional	113	26.7
Age	20–30 years	236	55.9		Sales and service positions	95	22.5
	30–40 years	130	30.8		Technical and production jobs	63	14.9
	Over 40 years	56	13.3	Average monthly income	Less than KRW 2 million	206	48.8
Education level	High school graduation	27	6.4		Between KRW 2 and 3 million	117	27.7
	University attendance and graduation	332	78.7		Between KRW 3 and 4 million	65	15.4
	Graduate school attendance and graduation	63	14.9		More than KRW 4 million	34	8.0

Table 2. Main characteristics of the metaverse.

	Division	Number of People	%		Division	Number of People	%
Metaverse platform	Minecraft	152	36.0	Music event engagement experience	Yes	186	44.1
	Roblox	123	29.1		No	236	55.9
	Fortnite	62	14.7	Reasons for non-participation	No information	128	54.2
	Zepeto	55	13.0		Not interested	93	39.4
	Others	30	7.1		Others	15	3.5

4.2. Review of the Reliability and Validity of the Measurement Concept

The validity and reliability of the measurement concept were reviewed to evaluate the internal consistency of the measurement tool. Onwuegbuzie and Daniel [44] stated that, to measure reliability using multiple items, the degree of homogeneity or consistency of the items' contents was measured through the correlations between the items. Muchinsky [45] argued that reliability was also used in terms of stability, internal consistency, accuracy, and predictability, and that the value to be measured should be evaluated by applying Cronbach's alpha. Cronbach's alpha ranged from 0 to 1. The higher the value, the greater the internal consistency of the items. Hair et al. [46] asserted that the applied value of Cronbach's alpha is evaluated as having high reliability between 0.8 and 0.9; although, the reliability measurement coefficient is not fixed, and no standard value exists. In addition, it is possible to determine whether reliability is generally secured, based on a Cronbach's alpha coefficient of 0.7 [47]. The Cronbach's alpha coefficients of the metaverse SPICE model variables in this study show that seamlessness (0.813), sense of presence (0.819), interoperability (0.825), concurrence (0.834), economic flow (0.810), customer satisfaction (0.846), and purchase intention (0.883) have no reliability problems. The results are summarized in Table 3.

Validity analysis of the measurement variables and exploratory and confirmatory factor analyses were performed to proceed with a validity review for each factor. Fabrigar et al. [48] performed a validity review when the sample size was 100 or more and desirable results were obtained when the number of measurement items in the sample was at least 5. Therefore, the current study had 23 questions, excluding demographic question items, and a factor analysis was conducted on the valid sample, as mentioned above. As presented in Table 4, the results of the exploratory factor analysis showed that the Kaiser–Meyer–Olkin (KMO) value of the metaverse SPICE model factor was 0.788, the Bartlett sphericity test result was 1296.026, the significance probability was 0.000, and the KMO value of the customer satisfaction factor was 0.756.

The Bartlett sphericity test result of the independent variables was 1296.026, the significance probability was 0.000, as reported in Table 5, and the KMO value of the purchase intention factor was 0.793.

The result of the Bartlett sphericity test for customer satisfaction was 1102.168 and the significance probability was 0.000, as presented in Table 6, indicating that the selection of variables for the factor analysis was appropriate.

Table 3. Reliability verification results.

Measured Variable	Variable	Deleted Cronbach's Alpha	Cronbach's Alpha
Metaverse SPICE Model	It provides an experience with continuity.	0.807	0.813
	The continuity is memorable.	0.813	
	The interest in music content increased due to the experience of the continuity element.	0.798	
	It provides an experience with a sense of reality.	0.731	0.819
	The sense of reality is memorable.	0.792	
	Interest in music content has increased due to the experience of elements of presence.	0.802	
	It provides a working environment.	0.813	0.825
	The interactive experience is interesting.	0.798	
	Interoperable experiences lead to fandom memberships, etc.	0.812	
	It has concurrency.	0.830	0.834
	The experience of simultaneity is memorable.	0.817	
	The experience of simultaneity has raised interest in music content.	0.811	
	It fits well with the elements of economic flow.	0.793	0.810
	Economic flows can be linked to my actual economic factors.	0.802	
	It induces an actual economic action to purchase music content.	0.817	
Customer satisfaction	Sensitivity toward the artist rises.	0.834	0.846
	I acquire a lot of information related to music content.	0.819	
	I want to participate in various events through experience.	0.842	
	It is becoming a standard for selecting music content.	0.813	
Purchase intention	My interest in music content products has increased.	0.864	0.883
	The possibility of purchasing music-content-related products has increased.	0.846	
	It convinces you to purchase the artist's merchandise.	0.835	
	I intend to purchase related products while continuing to use them.	0.827	

Table 4. Results of the exploratory factor analysis of independent variables.

Measured Variable	Variable	Factor
Metaverse SPICE Model	It provides an experience with continuity.	0.763
	The continuity is memorable.	0.802
	The interest in music content increased due to the experience of the continuity element.	0.777
	It provides an experience with a sense of reality.	0.763
	The sense of reality is memorable.	0.779
	Interest in music content has increased due to the experience of elements of presence.	0.802
	It provides a working environment.	0.796
	The interactive experience is interesting.	0.801
	Interoperable experiences lead to fandom memberships, etc.	0.763
	It has concurrency.	0.774
	The experience of simultaneity is memorable.	0.749
	The experience of simultaneity has raised interest in music content.	0.753
	It fits well with the elements of economic flow.	0.720
	Economic flows can be linked to my actual economic factors.	0.711
	It induces an actual economic action to purchase music content.	0.726
KMO and Bartlett's test		
Kaiser–Meyer–Olkin's measure of sampling adequacy		0.788
Bartlett's test	Approx. Chi-square	1296.026
	Df	73
	Sig.	0.000

Table 5. Results of the exploratory factor analysis on customer satisfaction.

Metrics	Variable	Factor
Customer satisfaction	Sensitivity toward the artist rises.	0.702
	Acquire a lot of information related to music content.	0.769
	I want to participate in and experience various events.	0.736
	It is becoming a standard for selecting music contents.	0.764
KMO and Bartlett's test		
Kaiser–Meyer–Olkin's measure of sampling adequacy		0.756
Bartlett's test	Approx. Chi-square	1102.168
	df	13
	Sig.	0.000

Table 6. Results of the exploratory factor analysis on purchase intention.

Metrics	Variable	Factor
Purchase intention	Interest in music content products has increased.	0.756
	The possibility of purchasing music-content-related products has increased.	0.803
	It convinces you to purchase the artist's merchandise.	0.798
	I intend to purchase related products while continuing to use them.	0.787
KMO and Bartlett's test		
Kaiser–Meyer–Olkin's measure of sampling adequacy		0.793
Bartlett's test	Approx. Chi-square	1186.964
	Df	16
	Sig.	0.000

To check convergent validity, the construct reliability (CR) and average variance extracted (AVE) indices of the measured variables were calculated using confirmatory factor analysis. Hair et al. [46] showed that convergent validity is secured when the CR is 0.7 or higher, and the AVE is 0.5 or higher. Therefore, the CR and AVE indices of the seven concepts constituting this study met the relevant criteria, as presented in Table 7, and convergent validity was secured.

Table 7. Confirmatory factor analysis results.

	Metrics	Non-Standardized Estimate	Standardized Estimate	Error Coefficient	t Value	CR	AVE
Metaverse SPICE model	Continuity 3	1.000	0.765				
	Continuity 2	1.034	0.778	0.083	13.398	0.874	0.827
	Continuity 1	0.889	0.795	0.089	8.012		
	Continuity 4	1.000	0.802				
	Reality 2	0.769	0.824	0.091	7.156	0.876	0.836
	Reality 1	0.836	0.806	0.081	11.845		
	Interoperability 3	1.000	0.815				
	Interoperability 2	1.168	0.802	0.101	9.256	0.815	0.812
	Interoperability 1	0.987	0.787	0.123	8.942		
	Concurrency 3	1.000	0.826				
	Concurrency 2	0.903	0.814	0.098	10.269	0.806	0.809
	Concurrency 1	1.102	0.795	0.105	12.147		
	Economic flow 3	1.000	0.804				
	Economic flow 2	0.921	0.813	0.089	10.269	0.825	0.803
	Economic flow 1	0.887	0.826	0.078	12.147		
	Customer satisfaction 4	1.000	0.821				
	Customer satisfaction 3	0.965	0.842	0.063	9.987	0.847	0.834
	Customer satisfaction 2	0.878	0.826	0.061	11.357		
	Customer satisfaction 1	0.862	0.812	0.059	19.159		
	Purchase intention 4	1.000	0.827				
	Purchase intention 3	0.978	0.829	0.069	9.962	0.879	0.856
	Purchase intention 2	0.903	0.816	0.065	11.785		
	Purchase intention 1	0.965	0.803	0.061	18.546		

Next, discriminant validity was verified according to the reasoning that values obtained from two measurements should have a low correlation with each other, assuming

that the two measures are based on separate constructs. Fornell and Larcker [49] found that discriminant validity is generally secured for two constructs if the square root of the AVE of each construct is much larger than the correlation of the specific construct with any of the other constructs. A comparative analysis of the correlation coefficients between the AVE square root of each specific construct and other constructs, as shown in Table 8, reveals that the AVE square root of each construct is larger than the correlation coefficient with the other constructs; hence, discriminant validity is secured.

Table 8. Discriminant validity analysis using AVE square root value of the construct.

Construct		Continuity	Reality	Interoperability	Concurrency	Economic Flow	Customer Satisfaction	Purchase Intention
Metaverse SPICE model	Continuity	0.823						
	Reality	0.702 **	0.806					
	Interoperability	0.623 **	0.689 **	0.811				
	Concurrency	0.607 **	0.622 **	0.599 **	0.830			
	Economic flow	0.618 **	0.654 **	0.624 **	0.669 **	0.813		
Customer satisfaction		0.660 **	0.671 **	0.597 **	0.614 **	0.687 **	0.826	
Purchase intention		0.660 **	0.671 **	0.597 **	0.614 **	0.687 **	0.712 **	0.834

Note: Concepts are their respective AVE values. ** $p < 0.01$.

Based on the measurement model, AMOS 25.0 was used to test the fit of the measurement model. RMR (root mean square residual), GFI (goodness-of-fit index), TLI (Tucker–Lewis index), IFI (incremental fit index), CFI (comparative fit index), and RMSEA (root mean square error of approximation) were used to evaluate the fit of the research model. RMR of 0.05 or less, GFI of 0.8 or more, TLI of 0.9 or more, CFI of 0.9 or more, and RMSEA of 0.8 or less were considered to indicate a good fit. Table 9 reveals that all fitness indices were suitable. These analyses used covariance structural analysis to confirm that satisfaction and purchase intention were formed by the interaction between providers and users of the music content marketing SPICE model in the metaverse by acquiring content information on the platform.

Table 9. Goodness-of-fit index of the measurement model.

Index	RMR	GFI	TLI	IFI	CFI	RMSEA
Baseline	≤ 0.05	≥ 0.8	≥ 0.9	≥ 0.9	≥ 0.9	≤ 0.08
Observation	0.036	0.823	0.905	0.907	0.916	0.047

5. Verification of Hypotheses

As shown in Figure 3, a path analysis was conducted to determine the relationship between the metaverse SPICE model factors and consumer satisfaction factors in music content marketing, and the influence of these consumer satisfaction factors on purchase intention. As shown in Table 9, the goodness-of-fit indices of the measurement model were found to be suitable for the goodness-of-fit index and structural model. As a result of analyzing the fit of the model, 9 of the 11 hypotheses were supported, and only 2 hypotheses were rejected in the verification of the metaverse SPICE model factors, consumer satisfaction, and purchase intention. First, in the hypothesis established to investigate the relationship between meteorological SPICE model factors and consumer satisfaction, we found that seamlessness ($\beta = 0.265$, $t = 2.879$), presence ($\beta = 0.278$, $t = 3.368$), interoperability ($\beta = 0.336$, $t = 6.753$), and concurrence ($\beta = 0.286$, $t = 4.645$) had a significant positive effect on consumer satisfaction, but economic flow ($\beta = 0.093$, $t = 0.728$) had no such influence. Second, in the hypothesis established to investigate the relationship between metaverse SPICE model factors and purchase intention, we found that seamlessness ($\beta = 0.312$, $t = 4.123$), presence ($\beta = 0.308$, $t = 3.864$), interoperability ($\beta = 0.320$, $t = 5.347$), and concurrence ($\beta = 0.293$, $t = 4.014$) had a significant positive influence on purchase intention, whereas economic flow had no influence. Third, in the hypothesis established to investigate the relationship between consumer satisfaction and purchase intention, consumer

satisfaction ($\beta = 0.423$, $t = 5.247$) was found to have a significant positive effect on purchase intention. A summary of the results is presented in Table 10.

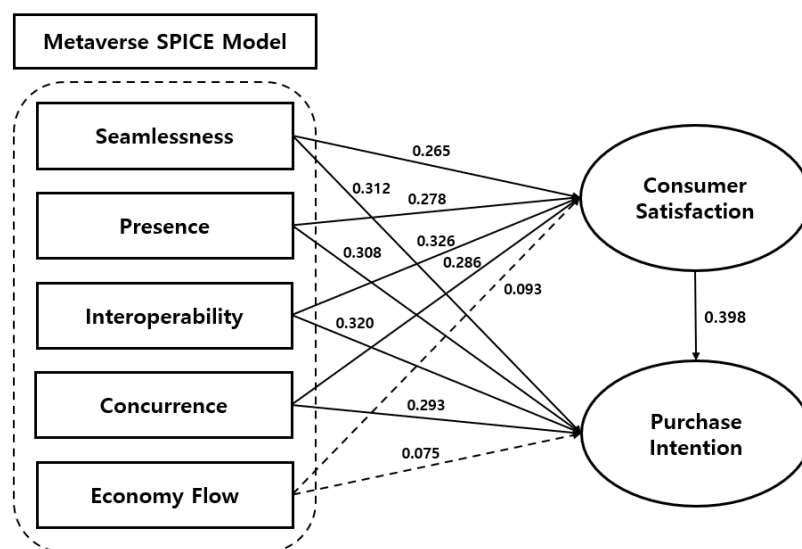


Figure 3. Research model path analysis.

Table 10. Hypothesis test results.

	Path	Standardization Factor	S.E.	t Value	p Value	Result
H1-1	continuity → customer satisfaction	0.265	0.061	2.987	***	Supported
H1-2	reality → customer satisfaction	0.278	0.063	3.368	***	Supported
H1-3	interoperability → customer satisfaction	0.326	0.051	6.753	***	Supported
H1-4	concurrence → customer satisfaction	0.286	0.049	4.645	***	Supported
H1-5	economic flow → customer satisfaction	0.093	0.097	0.728	0.591	N/A
H2-1	continuity → purchase intention	0.312	0.053	4.123	***	Supported
H2-2	reality → purchase intention	0.308	0.067	3.864	***	Supported
H2-3	interoperability → purchase intention	0.320	0.050	5.347	***	Supported
H2-4	concurrence → purchase intention	0.293	0.056	4.014	***	Supported
H2-5	economic flow → purchase intention	0.075	0.079	0.862	0.520	N/A
H3	customer satisfaction → purchase intention	0.398	0.063	4.951	***	Supported

*** $p < 0.001$.

6. Conclusions

This study investigated the effect of music content marketing on metaverse user satisfaction and purchase intention and analyzed the effect of consumer satisfaction formed by the SPICE model on purchase intention. This study proposes a marketing strategy using the SPICE model to promote the consumption of K-pop-oriented music content to lead the global market on metaverse platforms that are gaining popularity in the service industry. In addition, this study suggests a way to lead the metaverse platform market by presenting an optimized marketing strategy for users who enjoy music content on the metaverse platform [50]. Simultaneously, it proposes a mutual synergy effect by combining the metaverse platform with the existing cultural industry, thus making it possible to succeed in the global market. Moreover, this study is significant in that the empirical analysis data can present the value of music content marketing in the metaverse through the metaverse SPICE model. Specifically, it proposes a new paradigm for establishing a music content marketing strategy for metaverse users by offering a theoretical framework for using the SPICE model in marketing. We evaluated all the previously used methods.

First, it was confirmed that the music content marketing SPICE model positively affects the satisfaction of users who use music content in the metaverse, leading to purchase intention [3]. Metaverse users perceive SPICE model factors, such as continuity, sense of presence, interoperability, and simultaneity, as the same domain included in the content when enjoying music content through the platform, and users perceive and utilize the

music content they want through the platform as a more useful platform than existing SNS or streaming channels. This positively affects their continued use and purchase intention. Therefore, music content creators and providers will have to study and develop advanced technologies and differentiated strategies for content and information for platform users by focusing more on continuity, presence, interaction, and simultaneity, which are the characteristics of the metaverse [4]. There is a need for improving the quality of the music content and information provision service in the current metaverse and providing useful and convenient services, thereby emphasizing platform competitiveness, prioritizing retaining existing users, and introducing new users [51].

Second, the results established that the SPICE model factor within the metaverse is a marketing tool that can be used not only in music content but also in the overall industry that can be linked with content [5]. In other words, as the base of the non-face-to-face era and fourth industrial revolution technology, new users continue to flow into digital platform channels, including metaverse channels, and the market size is growing radically [52]. Among them, the MZ generation, the largest consumer, was identified by in-depth analysis of the lifestyle and trends of the MZ generation. Moreover, with the expectation that the content consumption class in the metaverse will gradually expand from the MZ generation to all generations, it would be desirable to conduct marketing-based segmentation, targeting, and positioning analysis in advance to establish a strategy suitable for each consumption class.

Third, the use of the metaverse is expected to expand music content because of the infinity of space, and the number of future audiences and users will continue to increase. Particularly, music events, concerts, and fandom meetings that make up music content will continue to grow as the number of network platforms that connect countries and regions increases even after the non-face-to-face era. Furthermore, music content in the metaverse can be fused with the advanced platform technology “non-fungible token (a unique and non-interchangeable unit of data stored on blockchain)”, which is expected to secure protection and increase the intellectual property’s value, bringing diversification of the platform and safety. Accordingly, it will be an optimal alternative to protect the music industry as content is provided smoothly due to the expansion of the market size and distribution of the metaverse platform [53]. Therefore, as the market for music content and music distribution on a platform is rare, it is necessary to research and develop marketing factors that have expanded scope, and build a strategy to can be applied to the evolving platform channels using the SPICE model [53,54].

Fourth, the metaverse market is expected to grow from USD 46 billion in 2021 to USD 280 billion by 2025. In particular, with the recent booming of the contactless market due to COVID-19, the metaverse has become more important. To maximize marketing impact, a strategy that fits the context and format of metaverse platforms and content that can focus on promotion through natural exposure within the metaverse should be established. Given that lower risk is accompanied by a lower return rate, investors cannot obtain an unexpected return rate. Conversely, higher risk is usually accompanied by a higher return rate, and investors usually obtain unexpected returns from these securities. Marketing tools that connect virtual and real stores are required. To derive information more effectively through targeting, it is necessary to establish a strategy for collecting data from both metaverse and platform users by classifying them according to their age, location, and gender.

Finally, when the metaverse was in the early stages of growth, only the game-platform-centered class was able to share information and consume content, so the general consumer’s understanding of the existence and use of the metaverse was limited. Since then, in the non-face-to-face era, interest in the metaverse has increased as companies actively use it as a marketing tool in a virtual space using virtual influencers. Additionally, the VR and AR markets are expected to grow rapidly, leading to a digital platform. Therefore, metaverse marketing, which is expected to revolutionize life after the end of the non-face-to-face era, will evolve and develop more actively in the future. This calls for the establishment of realistic and practical content development and marketing strategies.

Despite the academic and practical implications presented through the results of this study, there are limitations that need to be addressed in future research.

First, due to the COVID-19 situation, non-face-to-face sample collection was conducted, and there was a limitation in securing data of various layers and inducing in-depth answers to metaverse platform experiences and thoughts. It was difficult to understand the questionnaire items due to a lack of experience and awareness of the metaverse service and platform, so the collected sample layer was not diverse. Therefore, in future research, it will be necessary to collect various samples from the continuously growing metaverse user class to derive generalized research results. In addition, there are limitations in considering the marketing cases used on the metaverse platform. In future research, we intend to conduct research by subdividing the marketing cases of the entire virtual space platform, that is, AR, MR, and extended reality metaverse.

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