

Continuance Usage Intention on Subscription-based Streaming Service:

Focusing on the Dedication-Constraint Model*

구독 기반 스트리밍 서비스의 지속적 사용 의도: 자의 및 구속 모델을 중심으로

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With the rapid development of the digital era, the trend in consumption of digital products has undergone tremendous change in recent years to a subscription-based streaming service. The success of subscription-based streaming services depends heavily on customers' continuance usage. Multilateral perspectives are also required as antecedents of continuance usage. In consideration of the distinctive features of these services, this study adopts the dedication-constraint framework and develops a model of subscription-based streaming service continuance, which is assessed empirically using data collected from 315 actual users of music streaming services. Results indicate that subscription-based streaming service's continuance intention is jointly determined by two mechanisms: perceived benefits (usefulness and enjoyment), and service-specific investments (personalization and learning), with the former playing a more central role. Perceived usefulness and enjoyment directly promote satisfaction, while service-specific investments in personalization and learning increase switching costs. Theoretical and practical implications and future research directions are subsequently discussed.

Key Words: Subscription-based Streaming Service, Dedication-constraint Framework, Continuance Usage Intention, Music Streaming Service

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1. Introduction

Streaming service is defined as “services offering access to large digital catalogs for the payment of a monthly fee, a subscription, and those funded by advertising, without requiring users to sign up as members” (Wallin, 2021, p. 444). With the rapid development of information and communication technology and the rise of a generation of digital natives, subscription-based streaming services are a major trend in the digital products industry.

Recently, with increasing competition among subscription-based streaming service platforms, the interest of platform providers in continuous usage has risen significantly. Service users easily move to competing platforms and cancel subscription services, resulting in a stagnation or decline in new subscribers. For example, the number of subscribers to Netflix, a representative subscription-based streaming service, declined by 200,000 as of the first quarter of 2022 compared to the fourth quarter of 2021, marking the first decline in 11 years, and stock prices plunged more than 40% during the day. The main reason for this decline is intensifying competition with Disney Plus, Apple TV Plus, and regional-based platforms in each country (Cho, 2022). Both attracting new subscribers and maintaining existing users are critical factors for the survival of the platform, but especially contract-based services,

such as subscription-based streaming, require more effort and cost to bring customers back (Kim and Kang, 2011), so operators are more interested in maintaining existing users than attracting new subscribers (Kim, 2017).

Individuals' continuance usage intention is different from that of the pre- and post-adoption stage because user's perceptions on the Information Systems (IS) established from direct experience and interaction with the adopted IS and the provider (Limayem and Cheung, 2008). Based on the idea that continued use is the fundamental condition to judge whether IS adoption is successful or not, significant prior work has examined individual user's cognitive intention to use the IS continually (Khalifa and Liu, 2007). However, their concerns were focused on the simplistic view by largely emphasizing the interaction between the users or perceived benefits.

At present, in the context of maintaining continuous use, the aspect of the utility provided by the technology has been mainly studied in existing studies. In order to supplement this point, a new dual model, called the dedication-constraint framework, has recently been proposed that simultaneously considers the aspect of loss or cost that cannot stop the maintenance relationship. While the dedication-based mechanism is an emotion-based mechanism that allows users to make decisions based on their satisfaction with the service, the constraint-based mechanism makes deci-

sions in consideration of the additional cost that they may incur if the service is discontinued. Although both mechanisms are the basis for predicting the user's continued use, it is meaningful as a theoretical background that can provide a deeper understanding of user behavior in that users have very different perspectives on the causes of decision making.

For the above reasons, this study presented the following research questions- what factors affect customer continuance intention in a subscription-based streaming service? In order to solve this research problem, specific variables were applied to the dedication-constraint framework. Following previous research (Gong et al., 2022; Kuem et al., 2017; Zhou et al., 2012), as antecedents of continuance usage, two important variables of satisfaction and switching cost based on the dedication-constraint framework were included. In addition, the perceived usefulness and perceived enjoyment as antecedents of satisfaction as a dedication-based mechanism were adopted. Considering the advanced technology on personalization in streaming services, the roles of personalization and learning effects are consigned as constraint-based mechanisms.

As far as our knowledge is concerned, no studies have applied the dedication-constraint framework that considers both utility and cost aspects that were lacking in existing IS continuance usage studies to the subscription-based streaming service field and differentiate it from

existing studies by applying and demonstrating prior factors to the field characteristics. It is expected that our attempt will expand the spectrum of theoretical research through the application and verification of extended models from a comprehensive perspective in streaming research and provide results of the research to help platform operators who want to establish strategies for maintaining existing users in the fierce competition.

II. Theoretical Background

2.1 Dedication-Constraint Framework

IS research has long debated the adoption, post-adoption, and continuance usage of the technology. The conclusion that could be drawn through numerous research streams is that people decide to adopt or continue to use the technology based on various factors. For example, users comprehensively evaluate the degree of emotions, economic/social costs, and efforts to use, caused by experiences after adoption, and make decisions to continuously use the technology/service or switch to other alternatives. The dedication-constraint mechanism effectively explains the comprehensive evaluation process and has therefore been widely used as a theoretical basis for explaining the user's continuance usage behavior for the

internet and mobile-based technology/service in IS research (Chou and Hung, 2016; Gong et al., 2022; Kuem et al., 2017; Zhou et al., 2012).

Dedication refers to “individuals’ desire to maintain a relationship due to the prospects of long-term mutual benefits” (Chou and Hung, 2016, p. 779). The dedication-based mechanism suggests that users’ positive emotions or attitudes in the decision making process toward continuance influence the affective commitment (Gong et al., 2022; Kuem et al., 2017; Zhou et al., 2012), and the view is that higher perceived benefit boosts intention of continuance usage (Kim and Son, 2009; Zhou et al., 2012). In contrast, constraint refers to the user’s existing costs and efforts to use the technology/service and affect the calculative commitment (Gong et al., 2022; Zhou et al., 2012), resulting in an increased lock-in effect caused by the user’s investment, making it difficult to choose other alternatives (Kim and Son, 2009; Gong et al., 2022; Kuem et al., 2017).

Based on the dedication-constraint framework, Chou and Hung (2016) verify the impact of the affective commitment (related to the dedication mechanism) and the calculative commitment (related to the constraint mechanism) on the knowledge achievements in e-communities. As a result of the study, the affective commitment has a higher impact on knowledge achievement than the calculative

commitment. Zhou et al. (2012) try to explain a continuance usage in the internet-based social virtual world service and suggest that the perceived benefits-related factors, such as utilitarian and hedonic value, have a positive impact on service continuance usage through service satisfaction and affective commitment under the dedication-based mechanism. Also, they insist that service-specific investments, such as personalization and learning, have a positive impact on the intention of continuance usage through calculative commitment under the constraint-based mechanism.

Some studies are conducted to verify the moderating effect on dedication-constraint mechanisms or to further consider obligation as well as dedication and constraint. For example, in a mobile payment application study on consumer switching behavior, Gong et al. (2022) explain the impact relationship between the affective commitment and the calculative commitment reducing the switching behavior, and find that the calculative commitment has a moderating effect of strengthening the relationship between the affective commitment and the switching behavior. Kuem et al. (2017) form a tripartite model that reflects three aspects of Facebook: the dedication-based, the constraint-based, and the obligation-based mechanisms to identify relationships that affect the intention of continuance usage in SNS. Their study is meaningful in that it extends the theoretical model—including the

obligation-based mechanism, which is related to social context and to the detection-constraint mechanism—to explain the continuance usage of existing internet-based services, and shows different behavioral results by three mechanisms.

Apparently, prior research falls short of explaining the constraint-based mechanism. Continuance intention toward the information system is not only affected by the actual benefits but also by the switching costs. Chen and Hitt (2002) suggest that when the costs, especially monetary costs, include factors, such as psychological issues and replacement costs, the customers become more dependent on their incumbent service providers. Significant relationship marketing literature suggest that customers are engaged with continuing relationships with the service provider, either because they really like the features of the services or they believe there is no other option. To consider the purpose of personalization strategies using recommendation systems, the streaming services proactively adopt constraint-based mechanisms to increase the intention for continuance usage of the service.

2.2 Constraint Strategies in Streaming Service

In this research, the music industry, as a representative example of streaming services (Roslan et al., 2022), is focused on analyzing the characteristics of streaming services. Most worldwide music streaming services, such as

Spotify, Last.fm, and Pandora, have now adopted automatic music recommendation systems to suit users' needs based on their taste. Personalized recommendation systems effectively alleviate the burden and stress to filter out the relevant songs from the vast repository. For example, Spotify is well-known for its steadily improving recommendation system based on both collaborative filtering and content-based recommendations (Marshall, 2015). Every premium Spotify user gets their own *Discover Weekly* playlist, updated every Monday, with 30 new songs that its recommendation algorithms think the user will prefer, based on one's own tastes and those of other similar users. Spotify's *Now* feature provides playlists based on the user's habits and the current time of the day. Similarly, one of the most popular music streaming services in Korea, Melon, is also offering personal features "For U" and "My Music," which give the user's most frequently played music for a specific month, as well as personal recommended playlists based on one's listening history. It also uses collaborative filtering to provide a list of artists and albums each user might like. All these "personal" features make users consider the costs of switching as rather high.

Considering the lock-in effects caused by personalized service and recommendation systems, consumers create a strong habit and comfortable emotions toward a service with content and interface (Chen et al., 2018).

Thus, the streaming service invests a lot of funds for developing recommendation systems. However, in spite of tremendous efforts on lock-in strategies for existing users, many new competitive strategies have emerged in the streaming service industry. It is thus important to understand the comprehensive considerations of current users who would make a decision for continuance usage on the service. Accordingly, the dedication-constraint framework is suggested for investigating what factors affect continuance usage behavior even though the service providers capture the users with strong personalized strategies.

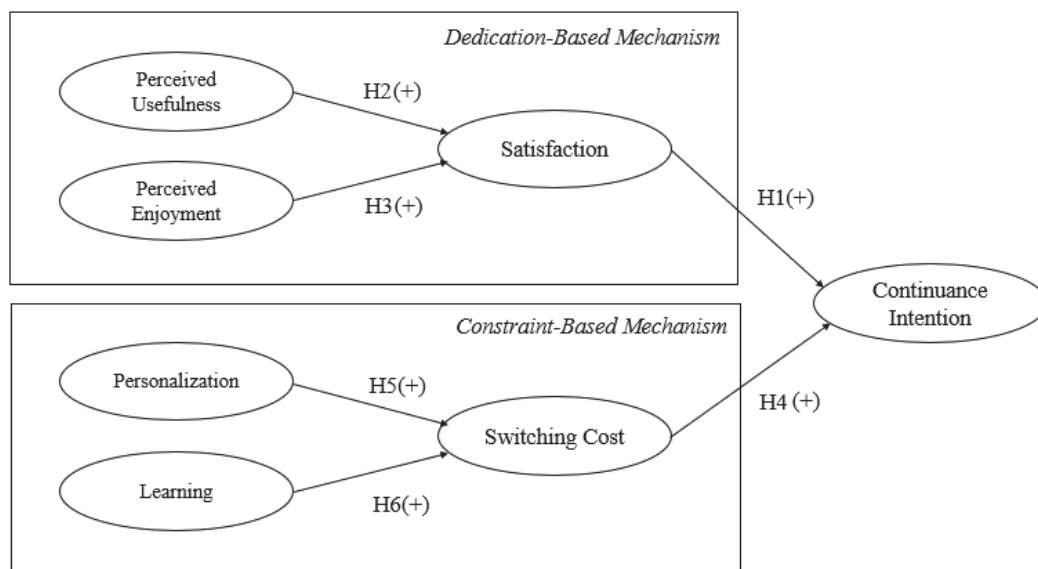
2.3 Salient Factors in Continuance IS Usage Research

Although a great volume of past literature has focused on understanding individual's acceptance of a new information technology application (e.g., IT exploration, innovation with IT), scholars have paid tremendous attention to the continuance usage intention in recent years (Chang et al., 2010; Chung et al., 2015; Kang et al., 2010). Bhattacharjee (2001) indicated that continuance intention to use a product or service is critical to the success and survival of an IS, particularly in the case of e-commerce and other online services in which the information systems have become the core of business. Bhattacharjee (2001) concluded that the continuance intention

of IS use is determined by satisfaction and the perceived usefulness, which explains 32% and 9% of the variance, respectively. Lee et al. (2007) extended the research and identified perceived usefulness, perceived ease of use, perceived enjoyment, and monetary value as significantly affecting mobile users' satisfaction, which in turn relates to the continuance intention. Karahanna et al. (1999) demonstrated the following findings from comparing the relative effects of perceived usefulness and ease of use during the pre-acceptance and post-acceptance stages of IS use: (1) usefulness affects attitude consistently and substantially during both stages of IS use, and (2) ease of use has inconsistent impact on attitude during the initial stage, which seems to further subside and become insignificant later stages. It is more appropriate to use perceived usefulness for salient ex-post expectations influencing users' satisfaction.

III. Hypotheses

Figure 1 illustrates the proposed research model for examining post-adoption phenomena in the context of music streaming services. According to Kim and Son (2009), the dual model of the dedication-constraint framework was developed in an attempt to study the benefits and service-specific investments. This



〈Figure 1〉 Research Model

study proposed and empirically analyzed the conceptual framework that depicts dedication-based and constraint-based variables as drivers of customer retention and their antecedents in an online context.

3.1 Dedication-based Mechanisms

Kim and Son (2009) argued that the dedication mechanism was enabled by the realization of net benefits, including satisfaction and perceived benefits. The rationale behind this proposition was that (1) a customer's current assessment of the service works as an indicator from which to expect the future value of the service and (2) a customer engages with the long-term relationship in an

anticipation of future value. Prior research on the IS continuance intention considered satisfaction as the salient determinant of IS success (Bhattacharjee, 2001; Limayem and Cheung, 2008).

Favorable feelings toward a particular service have long been found to be an important factor affecting the continuance usage of IT applications. Customers acquire positive feelings about a product when its performance meets or exceeds expectations (Bhattacharjee, 2001; Oliver, 1999) and satisfaction refers to "the consumer's sense that consumption provides outcomes against a standard of pleasure versus displeasure" (Oliver, 1999). Numerous past studies have suggested that satisfaction and continuance intention are positively correlated

in both offline and online business environment (Oliver, 1999). In the context of e-service, Luo et al. (2006) concluded that satisfaction greatly influences the dedication to the service. Therefore, the following hypothesis is proposed:

Hypothesis 1: Users' satisfaction with a music streaming service is positively related to their continuance intention with the service.

According to the cognitive evaluation theory, motivations can be classified into extrinsic and intrinsic subsystems (Ryan et al., 1983). Whereas extrinsic motivation is derived from the goal-oriented and mission-critical mind to successfully perform an activity, intrinsic motivation stems from the feelings of pleasure while performing a behavior. In the context of the IS motivation theory (Davis et al., 1992), IS users decide to continue using the system based on two fundamental factors. Extrinsic motivation is affected by the benefits and rewards of using the IS, which can be explained by perceived usefulness (Davis, 1989). In contrast, the intrinsic motivation is driven by the pleasure and fun of being involved in an IS, which in turn can be explained by perceived enjoyment (Davis et al., 1992).

Utilitarian value and hedonic value are not entirely new, but rather widely accepted factors when describing the motivations for performing a variety of behaviors in the online

context, such as shopping or using mobile apps. Babin and Attaway (2000) argued that positive affect associated with a website is related to both utilitarian and hedonic shopping value, impacting share of purchase. Perceived usefulness is conceptually similar to utilitarian value: users' cognitive evaluation of the utility of using an IS in terms of purpose fulfillment and problem solving (Babin et al., 1994). Previous research indicate that perceived usefulness usually positively influences to satisfaction which directly enhances the continuance usage of information systems. Various contexts of research examine the relationship between perceived usefulness and satisfaction (Almarashdeh, 2016; Chang and Chen, 2020; Hung et al., 2020). Perceived usefulness is a belief or an evaluation of value of technologies that if people adopt those technologies in their life or work, their performance or organizational environment will be improved. In this regard, the perceived usefulness of online streaming services could increase the satisfaction of usage of the service. Hence:

Hypothesis 2: Users' perceived usefulness derived from using a music streaming service is positively related to their satisfaction with the service.

Perceived enjoyment refers to users' positive emotions or feelings of fun and playfulness that are derived from the appreciation of an

experience itself, rather than from task completion (Babin et al., 1994). Previous research indicate that perceived enjoyment positively influences to satisfaction in information system usage (Joo et al., 2017; Shiau and Luo, 2013). When the internet first appeared, various information and order-taking services began to appeal to customers, and most competition was based on price and availability for the purchase of commodities because they were viewed as appropriate for utilitarian needs (Benjamin and Wigand, 1995). More recently, however, researchers propose that functional or instrumental attributes are no longer exclusively important in online retail: e-commerce consumers increasingly seek hedonic value online. Childers et al. (2002) noted that there is a direct effect of enjoyment on attitudes and behavioral outcomes such that immersive, hedonic aspects of the web are greatly appreciated. Bloch et al. (1986) suggested increased arousal, heightened involvement, perceived freedom, fantasy fulfillment, and escapism indicate a hedonically valuable experience. As discussed earlier, relative to many other online services (e.g., portal) which enhance effectiveness and usefulness achieved through the use of the service, the boundary between goal-oriented activities and play blurs in music streaming services, underlying the importance of hedonic value for satisfaction. Turel et al. (2010) suggested the theory of consumption values to explain user acceptance of hedonic digital

artifacts: they postulated that consumers identify multiple value dimensions, such as enjoyment, quality, social, value-for-money, and their tradeoffs, to make informed purchase decisions. The music streaming service itself provides various hedonic-relevant motivators, such as musical appeal, escapism, intrinsic enjoyment, playfulness, and even social values. These intrinsic motivators may ultimately affect satisfaction with the service and allow users to decide whether to continue using the IS or not. As such, the following hypothesis is formulated:

Hypothesis 3: Users' perceived enjoyment derived from using a music streaming service is positively related to their satisfaction with the service.

3.2 Constraint-based Mechanisms

According to the theory of planned behavior, switching costs can be considered as an external control belief or perceived behavioral control, which directly influences the behavioral intention. In the present research, switching costs can be regarded as the currently subscribed music streaming service users' perceptions of the time, money, and effort that is associated with switching to a new platform. Switching costs result from one's perceptions about the investment devoted to a certain service that are not easily transferable

or switchable to other services (Lam et al., 2004). In other words, perceived switching costs are associated with the migration to a new supplier, vendor, or service provider at any cost. Klemperer (1995) identified three types of non-transferable investments that are known to affect switching costs: transaction costs, learning costs, and artificial costs. In the context of online services, transaction and learning costs are incurred because people tend to personalize the features according to their tastes and individual needs. Therefore, an increase in risk and burden of the consumers as well as high dependency on the service providers is likely to lead to customer retention and continuance usage. Therefore, the hypothesis is stated as follows:

Hypothesis 4: Users' switching cost with a music streaming service is positively related to their continuance intention with the service.

Two antecedents that are associated with switching costs in this study are: personalization and learning. These two factors are commonly conceptualized as service-specific investments that relate to one's history of customizing an online service over time. Kim and Son (2009) stated that in the constraint-based mechanism, learning and personalization can be seen to affect switching costs, which eventually increases willingness to pay and inattentiveness to alternatives. As discussed

earlier, personalization is expected to affect transaction costs, whereas the learning is related to costs that include time and effort to be accustomed to the system. Jones et al. (2002) suggested that those investments to customize the features of the service are basically sunk costs, but people tend to assume that switching to a new service takes more time and effort.

Personalization refers to the extent to which a system has been customized to an individual user's preferences and needs (Kim and Son, 2009), and is believed to increase and sustain initial and post-adoption rates. Gilmore and Pine (2002) adopted personalization features as service-specific investments that can later create lock-in effects. Kim and Son (2009) indicated that at least two contrasting forces are playing pivotal roles in determining the customer-firm relationship and shaping post-adoption behaviors. Lee and Lehto (2010) confirmed that users invest in personalization when they have relatively high expectations of receiving benefits from doing so or when they have unique needs that cannot be met by the default configuration of the system. The growth of interest and needs in one-to-one marketing has led marketers to utilize resources for personalization for competitive advantage. The idea of personalized products and service offerings existed even before the emergence of the internet, but improvements in information technology and the internet have

furnished consumers with more efficient and valuable product and service recommendations. A huge trend in music streaming services is the growing need to easily discover new music that fits his or her preference based on individual listening history and behaviors. If the provider acquires collective personal data, the provider will be more likely to deliver better service than its competitors. It will create the lock-in effect, making users more reluctant to switch to new services, even if they have more economic benefits or a more convenient user interface. As the current service provider offers benefits that suit personal needs, the user will be more constrained to the system and unwilling to change to an alternative service. Accordingly, the following hypothesis can be formulated:

Hypothesis 5: Users' extent of personalization in a music streaming service is positively related to their switching cost of the service.

Another important factor that influences switching costs is learning. Learning refers to the amount of time and effort that has been spent by the customer to learn routines, procedures, and features of a particular service (Alba and Hutchinson, 1987). As services are inadequately standardized, the customer's skill in using a particular service is not necessarily transferable to other services (Kim and Son, 2009). Past investments to learn

and modify services to the users' preferences will increase switching costs because they have to spend extra time and effort to recreate settings and preferences at a new service. Jones et al. (2002) pointed out that when consumers switch service providers, they incur various learning costs ranging from time spent collecting information about potential alternatives to relinquishing benefits from an existing provider. Learning costs can be further distinguished into costs prior to or after switching and whether the costs are related to customer learning or service provider learning. Prior to switching, most learning costs are associated with search and evaluation: (1) geographic dispersion and limited alternatives per region, (2) service intangibility, (3) and inseparability of production and consumption (Zeithaml, 1981). After switching to a new service, users also have to expend time and effort to acquire and adapt to the new procedures and routines, which require both behavioral and cognitive costs. For example, users who are already accustomed to the features of Melon will find it difficult to apply their skills and knowledge to other streaming services, such as Genie or Bugs.

Furthermore, users need to learn about the way of providing content as a result of the search, the service that enables new content to be accessed through the BJ system, and the additional service that provides information about concerts and artists related to their

favorite content. In other words, users must spend time and effort getting used to the information provided by the service. With the launch of various streaming services, the service providers are diversifying how they offer their services, such as contracting exclusively for specific content or producing and distributing their content. As a result, the scope of the user to learn is expanding from the interface of the streaming service to the content provided.

In summary, learning within a certain music streaming service requires investments of individual time and effort. Individuals are unlikely to be able to directly transfer or apply these investments to another service. The learning required to use the specific service is believed to positively influence overall switching costs. Overall, it is expected that as individuals invest in learning music streaming service networks, they are less likely to discontinue using the service. This leads to the hypothesis:

Hypothesis 6: Users' extent of learning in a music streaming service is positively related to their switching cost of the service.

IV. Methodology

4.1 Measures

All the measures were adapted from pre-

viously validated studies to fit the context of this study (See Table 1). The questionnaire consisted of three parts: (1) the first part asked respondents general information about music streaming services they use (e.g., type of streaming service, how long they used each service, the type of device they normally use for the service, frequency of usage, and how long they stay for each visit), (2) the second part had research questions following the theoretical model. Each item corresponding to the construct was measured using a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree), except for satisfaction, which was measured with four items based on a 7-point semantic differential scale, (3) the third part consisted of a questionnaire about respondent's demographic information. For the sake of the survey participants, the questionnaire items listed in Table 1 were translated into Korean. A pilot study was conducted for internal validity by assessing the nature of relationships among the constructs. Discussing the suitability of the translated questionnaire items by participants could ensure the internal validity of this study. After slight modifications in wording to reduce ambiguity, a revised questionnaire was conducted on 30 university students. All constructs were proven to have good reliability through Cronbach's alpha verification, with each construct exceeding the accepted 0.7 reliability level.

〈Table 1〉 Measurement items

Constructs	Measurement items	References
Continuance Intention	CI1: I intend to continue my use of current Music Streaming Service(MSS) in the future.	Bhattacharjee (2001)
	CI2: I intend to increase my use of current MSS in the future.	
	CI3: I will keep using the current MSS as regularly as I do now.	
Satisfaction	SAT1: Extremely dissatisfied/satisfied	Bhattacharjee (2001)
	SAT2: Extremely displeased/pleased	
	SAT3: Extremely frustrated/contented	
	SAT4: Extremely terrible/delighted	
Switching Cost	SC1: Switching to a new MSS would involve some hassle.	Kim and Son (2009)
	SC2: Some problems may occur when I switch to another MSS.	
	SC3: If I stop using the current MSS, I will waste a lot of the effort that I have already made in the MSS.	
Perceived Usefulness	PU1: Using MSS enables me to acquire more information or know more music.	Lin and Lu (2011)
	PU2: Using MSS improves my efficiency in listening to and searching new music.	
	PU3: MSS is a useful service for what I initially wanted to accomplish.	
Perceived Enjoyment	PE1: Using MSS is pleasurable.	Davis et al. (1992); Thong et al. (2006)
	PE2: I have fun with using MSS.	
	PE3: I find using MSS to be interesting.	
Personalization	PER1: I "set up" MSS to use it the way I want to.	Kim and Son (2009)
	PER2: I have put effort into adapting MSS to meet my needs.	
	PER3: I have chosen features offered by the MSS to suit my style of MSS.	
Learning	LRN1: Learning to use the features offered by the MSS took a lot of time and effort.	Kim and Son (2009)
	LRN2: There was a lot involved for me to understand the MSS well.	
	LRN3: I spent a lot of time and effort to learn how the "system works" at the MSS.	

4.2 Data Collection

An online survey was used to collect data for empirical testing. Data were randomly collected from people in their 20s and 30s who have been using Korean music streaming

services for more than 6 months. The survey was carried out for two weeks and repetitive submissions of the questionnaire from the same respondent were forbidden. A total of 336 responses were collected, and after excluding 21 incomplete answers, 315 valid samples were

used for the analysis. The survey included questions regarding the respondents, such as age, gender, and construct measurements.

The final sample consisted of 57.8% male and 42.2% female respondents; 67.6% were in their 20s and 32.4% were in their 30s or above. The distribution of the type of music streaming service was: Melon (57.8%), Genie (12.7%), Bugs (11.7%), and others such as Mnet and Naver Music (17.8%). A total of 88.6% of users used mobile phones as their main device for streaming service, and the rest used PC.

V. Results

5.1 Measurement Model

A structural equation modeling technique via AMOS was used to test the proposed model. For the psychometric properties of measure, AMOS-based confirmatory factor analysis (CFA) was performed. The CFA results showed that the third item of learning (LRN3) had poor loading (0.21) and high error variance (0.73) indicating that it may not be a good indicator of the construct. After removing LRN3, all the constructs in the model were of good reliability and had good convergent and discriminant validity. After the confirmatory factor analysis, the fit indexes were identified as

GFI=0.899, AGFI=0.860, CFI=0.948, NFI=0.913, RMR=0.057, RMSEA=0.065, $\chi^2=385.502$ (df=166, p=0.000). It was confirmed that they were generally satisfactory to the appropriate standards claimed by Bagozzi and Yi (1988), Hu and Bentler (1999). As shown in Table 2, average variance extracted (AVE) and composite reliability for all the constructs exceeded 0.50 and 0.70, respectively, demonstrating good constructs reliability (Fornell and Larcker, 1981). The reliability of each scale was also examined with Cronbach's alpha. The acceptable level of Cronbach's alpha is said to be higher than 0.70. As shown in Table 2, the reliability of the scale measures exceeds the recommended values by significant amounts.

Discriminant validity is approved if the square root of the AVE of a measure is larger than its correlation coefficients with the other measures (Fornell and Larcker, 1981). It was determined that each scale met the criterion with AVE close to 0.70 and larger than all of the correlations, which suggests that discriminant validity is satisfactory (See Table 3).

To test the common method bias, a post hoc Harman's single-factor test was first conducted by entering all constructs into an unrotated principal component analysis and examining the resultant variance (Harman, 1976). The results showed that seven factors were present and the variance explained by the most significant factor was only 11.12%. Second, the

〈Table 2〉 Confirmatory Factor Analysis using AMOS

Construct/Item	Estimate	S.E	C.R	Standardized Coefficient	AVE	Construct Reliability	Cronbach's alpha
PU → PU1	1.00			0.65	0.63	0.84	0.71
PU → PU2	1.10	0.12	9.06	0.66			
PU → PU3	0.88	0.09	9.62	0.73			
PE → PE1	1.00			0.81	0.70	0.87	0.92
PE → PE2	1.09	0.05	20.40	0.93			
PE → PE3	1.12	0.05	20.70	0.94			
PER → PER1	1.00			0.57	0.66	0.85	0.75
PER → PER2	1.42	0.16	9.16	0.82			
PER → PER3	1.12	0.13	9.13	0.78			
LRN → LRN1	1.00			0.82	0.67	0.80	0.69
LRN → LRN2	1.18	0.10	11.70	0.94			
SAT → SAT1	1.00			0.91	0.74	0.92	0.82
SAT → SAT2	0.89	0.04	23.76	0.88			
SAT → SAT3	0.89	0.04	22.35	0.86			
SAT → SAT4	0.86	0.04	23.36	0.88			
SC → SC1	1.00			0.72	0.55	0.78	0.93
SC → SC2	1.06	0.09	12.45	0.81			
SC → SC3	1.24	0.10	12.55	0.82			
CI → CI1	1.00			0.84	0.69	0.87	0.93
CI → CI2	1.17	0.05	22.06	0.93			
CI → CI3	1.17	0.05	22.61	0.95			

〈Table 3〉 Correlation Matrix and Discriminant Assessment

	PU	PE	SAT	PER	LRN	SC	CI	AVE
PU	1.00							0.63
PE	0.38	1.00						0.70
SAT	0.40	0.35	1.00					0.74
PER	0.26	0.17	0.18	1.00				0.66
LRN	0.01	0.00	0.02	0.00	1.00			0.67
SC	0.01	0.03	0.06	0.05	0.27	1.00		0.55
CI	0.26	0.27	0.46	0.18	0.05	0.15	1.00	0.69

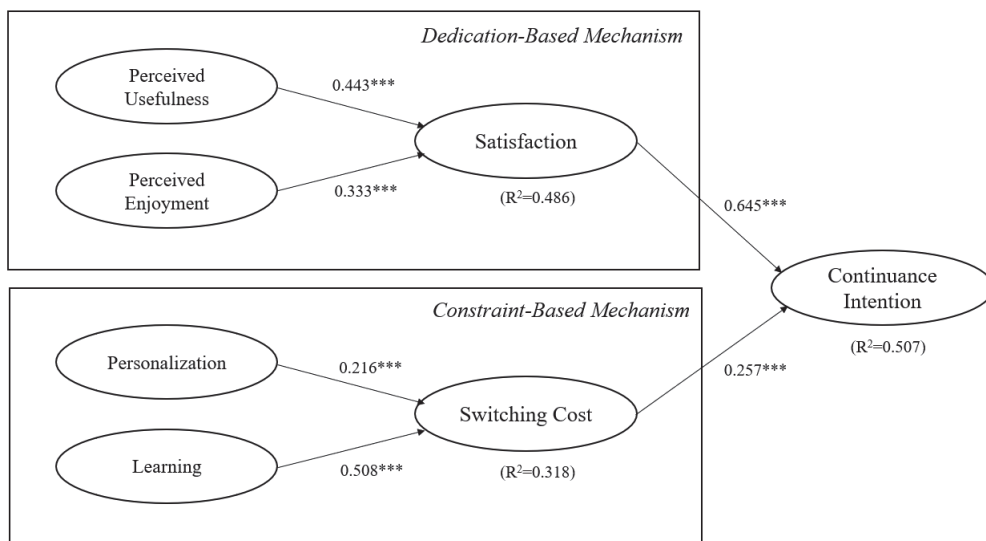
new measurement model was also used with all indicators loaded on a common method factor by comparing with the original measurement (Liang et al., 2007). The results indicated that the principal variable loadings were all significant at the 0.001 level, while common method factors were insignificant, providing no evidence for common method variance.

5.2 Hypothesis Test

The structural model fit was evaluated using multiple fitness indices, including $\chi^2/\text{degrees of freedom (df)}$, goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), normed fit index (NFI), Tucker-Lewis Index (TLI), comparative fit index (CFI), and root

mean square error of approximation. The following indices were obtained: $\chi^2/\text{df} = 2.283$, GFI = 0.893, AGFI = 0.86, NFI = 0.914, TLI = 0.94, CFI = 0.949, TMSEA = 0.064, which all fell into acceptable ranges. Taken together, the model was considered as a reasonable representation of an individual's reactions to a music streaming service.

The results of the structural model analysis are shown in Figure 2. A significant amount (50.7%) of variation in continuance intention is explained by the dedication and constraint mechanisms. The research model accounted for 48.6% and 31.8% of the variances in satisfaction and switching cost, respectively. None of the three control variables (age, gender, and mobile service provider) had a significant impact on the dependent variable.



〈Figure 2〉 Results of Analysis

〈Table 4〉 Hypothesis Testing Results

	Path	Path Coefficient	t-value	Result
H1	Satisfaction → Continuance Intention	0.645***	12.132	Supported
H2	Perceived usefulness → Satisfaction	0.443***	5.455	Supported
H3	Perceived enjoyment → Satisfaction	0.333***	4.845	Supported
H4	Switching cost → Continuance Intention	0.257***	5.099	Supported
H5	Personalization → Switching cost	0.216***	3.376	Supported
H6	Learning → Switching cost	0.508***	7.612	Supported

***p < .001

Continuance intention in music streaming service was significantly associated with both satisfaction ($\beta = 0.645$, $t = 12.132$, $p < 0.001$) and switching cost ($\beta = 0.318$, $t = 5.099$, $p < 0.001$), supporting both H1 and H4. In the dedication-based mechanism, the positive effects of perceived usefulness ($\beta = 0.443$, $t = 5.455$, $p < 0.001$) and perceived enjoyment ($\beta = 0.333$, $t = 4.845$, $p < 0.001$) on satisfaction are significant (H2 and H3 supported). In the constraint-based mechanism, both personalization ($\beta = 0.216$, $t = 3.376$, $p < 0.001$) and learning ($\beta = 0.508$, $t = 7.612$, $p < 0.001$) have significantly positive effects on switching cost (H5 and H6 supported) (See Table 4).

The success of online services has attracted significant attention to both the business and research community in recent years, and the purpose of this research was to examine the factors and mechanisms that influence users' continuance intention in music streaming services. The findings based on actual users of

music streaming services provide good evidence that both dedication- and constraint-based mechanisms are good predictors of users' continuance intention of the service. Specifically, two types of perceived benefits or values (i.e., perceived usefulness and perceived enjoyment) as well as two sources of service-specific investments (i.e., personalization and learning) influence continuance intention through satisfaction and switching costs, respectively. This analysis has a number of implications for both research and practice.

VI. Conclusions

The main objective of this study was to confirm the effect of dedication- and constraint-based mechanisms on post-adoption phenomena of streaming services. Therefore, the music streaming field was chosen among the representative streaming services. There are three

important theoretical contributions in this research. First, this research identifies the factors affecting the continuance IS usage based on the dedication-constraint framework. By understanding the impacts of two different antecedents such as satisfaction and switching cost, this research extends studies on the IS continuance usage. Second, the research model is modified for the distinctive context of music streaming services with a personalization strategy through a recommendation system. The study tried to explain the cause of customer attrition despite many recent services trying to lock in customers through personalization strategies. Assuming that recreational and hedonic values also drive practical value in the music streaming field, the relationship of the effect on continuance usage was verified by including the construct of perceived enjoyment in the model. As a result of the analysis, both dedication-based and constraint-based mechanisms had a significant effect on the continuance intention of music streaming services. However, it is noteworthy that the effect of dedication-based mechanisms, including perceived enjoyment on continuance intention, had a greater explanatory power than that of the constraint-based mechanism. Listening to music is typically a pleasurable activity, and therefore, for music streaming service consumers, the hedonic value can be an important factor influencing the continuance of use. Through the research results, it was found that

when music streaming service consumers were satisfied, not only practical value but also hedonic value were considered important. That is, perceived usefulness, by enabling users to find the right or similar style of music that they are looking for, will affect the users' satisfaction. However, it was found that perceived enjoyment by giving entertaining experiences (e.g., watching their favorite artists' performance or interacting with other users via comments and reviews) is also a critical driver of the dedication-based mechanism in the music streaming context. Third, we consider the learning as an explanatory variable of switching cost in streaming sites. With the fierce competition among streaming services, each service adopts differentiated strategies by making a contract about monopolizing streaming the certain contents. In this context, individuals learn not only the function of applications of service but also the contents in the streaming services. This research theoretically reflects the comprehensive learning situation for streaming services.

The results of this study offer several implications for practitioners as well. The streaming service providers have been developing very personalized recommendation systems and filtering music that each customer might like via dedicated algorithms as a main strategy for the consumer locking-in the service. In the early stage of the streaming service, it was true that this personalization strategy

had caused switching costs and acted as a barrier to consumers' movement to other platforms. However, as streaming services have increased rapidly since 2018, and as the number of users of streaming services has increased since the spread of COVID-19, the steaming service is securing competitiveness by lowering the technical barrier and acquiring exclusive rights to the content. Therefore, it can now be seen that the individual recommendation system technology and the amount of content possessed have almost leveled across platforms, and with just a few clicks on any platform, it is possible to receive a music recommendation that suits customers and easily find the content desired. Therefore, with the recent frequent movement between platforms, the problem of declining new subscribers has been intensifying.

In this situation, the practical contribution of this study is that it provides the insight that streaming service platforms need to be targeted to be more focused on the user satisfaction rather than the lock-in effect through developing their algorithms and interfaces. Specifically, the results suggest that, in this situation, it is necessary to focus more on improving the continuance intention centered on consumer satisfaction related to the dedication-based mechanism, rather than focusing on personalization factors such as a personalized recommendation, which has been a main strategy of music streaming services related to the

constraint-based mechanism. In addition, most of the existing studies focus on learning about the method of using interfaces and designed research. But now, users have to learn what contents they offer in the streaming service. In other words, as the content is exclusively produced or provided by a specific streaming service, the users learn the specific details that the service can be used with any content. In addition, it is determined by the overall satisfaction obtained through the platform, including the continuous satisfaction obtained through the recommended content, as well as the satisfaction through the specific exclusive content. Regarding this, service developers should consider hedonic factors as influential antecedents of satisfaction to enhance positive psychological reactions to the service. For example, building a community for an artist's fans to gather and share their message to their favorite artist would yield immersive and entertaining experiences as well as a strong sense of social presence.

Nevertheless, practitioners should not ignore the constraint-based mechanism to increase continuance intention. Learning and personalization significantly influenced the formation of switching costs in the context of music streaming services. This implies that the more time and effort users invest in learning the streaming service, the more likely they will prefer that service to an alternative. However, if the investment is perceived as excessively

high from the users' point of view, it can act as a barrier to entry for new subscribers. Thus, it is not a good plan to blindly increase the switching cost to boost the continuance intention of the existing users. Moreover, now that the amount of content and the technical differentiation of the recommendation system have almost disappeared, service providers should develop and strengthen new strategies to properly manage the switching cost and improve the continuance intention. Offering differentiated incentives to frequent and long-time users, such as priority access to the content from their favorite artists, might be a smart way to encourage customer patronage as well.

Although the proposed antecedent model was largely supported in the empirical analysis, while interpreting the findings, several limitations of this study were identified. First, caution must be observed in generalizing these findings because the study specifically examined the Korean music streaming services. Unlike many other dominant global music streaming services (i.e., Spotify, Pandora, or Deezer) that were run as "freemium" models (there are two types of consumers: users who use the service free of charge with limited features and paid users who subscribe for a monthly charge with unlimited access to all features), Korean music streaming services (Melon, Genie and Bugs) were all of a premium subscription model. Thus, collection re-

sponses from one country can limit the generalizability of the results. Second, the results were based on cross-sectional data; only interrelationships were tested. As this study provided only a short-term snapshot of user behavior, longitudinal investigations are encouraged in future research. For a longitudinal study, testing the model with actual usage behavior or actual repurchase data instead of continuance intention is recommended. Third, since the data used for analysis was collected in 2016, there is a limit to accurately analyzing the rapidly changing streaming service market. Fourth, it is important to be cautious when generalizing the analysis' findings because this study's subjects of analysis are primarily focused on their 20s and 30s. Since the 20-30s can learn technology relatively quickly and are also heavy users of streaming services, it is necessary to expand the research on the switching costs from learning experienced by different age groups and the enjoyment attained via streaming services.

Streaming services are expected to become more important in the content market in the future, and services for various content, such as movies, cartoons, and novels are emerging in addition to music. In line with this phenomenon, it is expected that it will be of great help to the development of related research if a widely applicable model can be established. Moreover, it would be interesting to further investigate other antecedents or intervening

variables of the mechanism. Finding a new mechanism or variable that can better understand the intention to continue a service, such as integrating relational, capital, and social support into the model from Zhou et al. (2012) and Kuem et al. (2017) and verifying the influence relationship could provide a wealth of new implications. As such, a study on the new influence relationship based on topics related to rate plans and subscription conditions other than the main contents of the service is also considered to be meaningful as a follow-up study. Finally, it is hoped that this study will be the basis for a broader examination of possible relationships between and within mechanisms to provide a clearer understanding of customer relationship management.

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